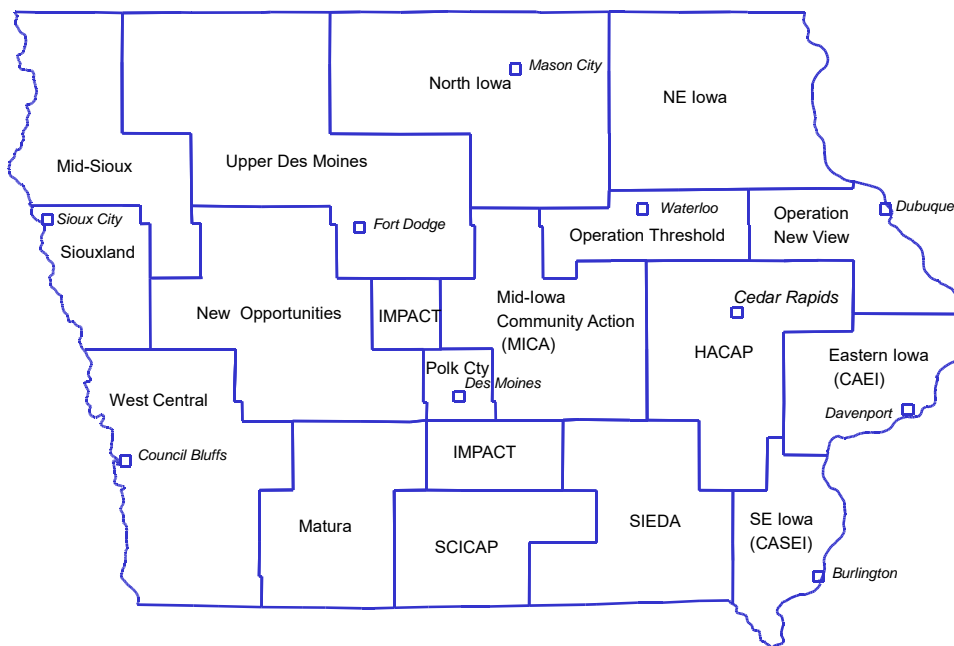


REPORT ON THE IMPACTS AND COSTS OF THE IOWA LOW-INCOME WEATHERIZATION PROGRAM -- Calendar Year 2016

October 18, 2017

Iowa Local Weatherization Agencies



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Calendar Year 2016**

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**Prepared for the
Iowa Statewide Low-Income Collaborative**

by

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EXECUTIVE SUMMARY

This report summarizes the state and utility low-income weatherization program activity for low-income dwellings weatherized to completion in Iowa during calendar year 2016 through the Iowa Weatherization Assistance Program. The report includes state, utility, and agency summaries of spending and impacts by measure, end-use, and fuel type. The base data consists of statewide program tracking databases of spending and measure installations maintained by the Iowa Division of Community Action Agencies. Fuel consumption histories were provided by the three co-funding utilities, including by Black Hills Energy, Interstate Power and Light Company, and MidAmerican Energy.

We estimated energy and coincident demand impacts for the program participants by using algorithms developed as part of the study of the calendar year 2007 program¹. The estimated impacts were adjusted using billing analysis of the program clients.

PROGRAM COSTS AND IMPACTS

The WAP program spent \$19,903,765 for materials, labor, and support while installing measures in 1,473 dwellings during calendar year (CY) 2016. Funding increased 6.9% from the prior year. Federal and state funding accounted for 69% of overall expenditures while utilities funded the remaining 31%.

The program expenditures for materials, labor, and support averaged \$13,512 in 2016 compared to \$12,310 in 2015 (a 9.7% increase). The major measures installed by the program in 2016 are essentially unchanged from the 2015 program.

First-year savings totaled 306,300 therms; 1,002,100 kWh electricity; 30,600 gallons of propane; and 977 gallons of fuel oil. First-year peak demand savings totaled 3,180 therms, 300 kW summer demand, and 260 kW winter demand.

Electricity savings averaged 685 kWh for 1,456 dwellings. The program saved an average of 245 therms of natural gas for 1,248 dwellings with gas impacts. In addition, the program delivered first-year savings of 241 gallons of propane in 127 dwellings with propane impacts, and 140 gallons of fuel oil in 7 dwellings with fuel oil impacts.

First-year client energy cost savings totaled \$385,900, averaging \$262 per housing unit.

¹ Dalhoff Associates, LLC. Report on the Impacts and Costs of the Iowa Low-Income Weatherization Program – Calendar Year 2007, October 15, 2008.

Program Savings

	Electricity (kWh and kW)			Natural Gas (therms)			Propane (gals)	Fuel Oil (gals)
	Overall	DCAA	Utility	Overall	DCAA	Utility	DCAA	DCAA
Energy	1,002,100	410,800	591,300	306,300	108,800	197,500	30,600	977
Summer Demand	300	120	180	NA	NA	NA	NA	NA
Winter Demand	260	110	140	3,180	1,120	2,060	NA	NA

Average Impacts¹ per Dwelling (for those receiving measures with a given fuel type)

	Electricity (kWh)			Natural Gas (therms)			Propane (gals)	Fuel Oil (gals)
	Overall	DCAA	Utility	Overall	DCAA	Utility	DCAA	DCAA
Energy	685	282	619	245	88	215	241	140
Summer Demand	0.208	0.084	0.191	NA	NA	NA	NA	NA
Winter Demand	0.176	0.079	0.150	2.6	0.9	2.2	NA	NA

Expenditures and First Year Client Fuel Bill Savings

Totals	Overall	DCAA	Utility	Averages	Overall	DCAA	Utility
Expenditures²	\$19,903,800	\$13,769,200	\$6,134,500	Expenditures	\$13,510	\$9,350	\$5,470
Client Fuel Savings	\$385,900	\$167,100	\$218,700	Client Fuel Savings	\$262	\$114	\$195

¹ Average impacts are for dwellings that received the measures, and so the averages of the Utility and DCAA will not total to the statewide average

² Measure expenditures, excludes utility admin expenses

UTILITY EXPENDITURES AND IMPACTS

The three major investor-owned utilities that provide gas and electricity in Iowa, Alliant-IPL, MidAmerican Energy, and Black Hills Energy, contributed \$6,134,533 for weatherization measures, accounting for 31% of total program expenditures. The utility expenditures averaged \$5,470 for the 1,122 dwellings that received utility-funded measures.

Utility-funded measures saved a total of 591,300 kWh, averaging of 619 kWh of electricity for the 956 dwellings with utility-funded electricity measures. Utility funded measures also saved a total of 197,500 therms, averaging 215 therms of natural gas for the 919 dwellings with utility-funded natural gas measures. Utility-funded measures reduced peak electricity demand by 180 kW in the summer and 140 kW in the winter, and provided 2,060 peak-day therms of gas savings. Utility-funded measures accounted for 59% of program electricity savings and 65% of program gas savings.

Utility-funded measures yielded first-year client bill savings of \$218,700, averaging \$195 per dwelling that received utility-funded efficiency measures. Electricity bill savings averaged \$69 per household for utility-funded electricity measures. Gas bill savings averaged \$166 for those with utility-funded gas measures.

FUEL CONSUMPTION ANALYSIS RESULTS

The natural gas savings were first estimated using the measure-specific revised algorithms developed for the CY 2007 program, and then adjusted based upon a billing analysis of the weatherization clients. The factors were applied to the estimated electricity, natural gas, propane, and fuel oil heating measures, and to natural gas and propane water heater measures. Along with providing better assessments of agency-level impacts, this procedure also provides a check on the accuracy of the algorithms used to estimate savings.

Natural gas savings for single family site-built dwellings averaged 251 therms \pm 15 at 90% confidence. This represents a 25.1% savings \pm 1.3% at 90% confidence for natural gas measures. Mobile home savings averaged 162 therms \pm 31 at 90% confidence, equating to a 20.1% savings \pm 3.6%.

Electricity savings were initially estimated using algorithms developed from savings of the 2005 and 2006 program. These estimates were adjusted based upon a billing analysis of electricity impacts of the 2012 and 2013 programs. The billing analysis for the CY 2016 program found that savings averaged 2,711 kWh \pm 1,977 for dwellings with electric main heat, and 718 kWh \pm 234 for dwellings heated with other fuels.

CHANGES IN PROGRAM DELIVERY AND REPORTING

There were no significant changes in measures delivered for the CY 2016 program, as compared to the CY 2015 program.

Organization of the Report

Section 1, Summary of Program Impacts and Expenditures, provides the overall findings of the study, and relates these to prior year results. In addition, it provides broad summaries of impacts and costs for the agencies.

Section 2, Fuel Consumption Analysis and Assessment of Agency-Level Savings Adjustment Factors, details the methodology and results of the fuel consumption analysis. A standard comparison-adjusted pre/post weather-normalization methodology was used to assess impacts. A section was added at the end, entitled Comparison of Sample and Overall Program Populations.

Section 3, Detailed Spending and Impact Profiles by Funding Entity provides detailed result tables for the overall program, state funding, and for each of the three funding utilities. These tables include counts of installations and totals and average energy savings, demand impacts, and program expenditures by measure.

Section 4, Detailed Spending and Impact Profiles by Agency provides tables similar to those in Section 4 for each weatherization agency, for all measures installed.

Section 5, Detailed Spending and Impact Profiles by Agency for Utility Expenditures provides similar detail by agency, but is limited to measures funded by the utilities.

Appendix A provides a characterization of households and dwellings weatherized during 2016.

Appendix B provides tabular data of selected charts in Section 1 of the report.

1. SUMMARY OF PROGRAM IMPACTS AND EXPENDITURES

This section begins with impacts and expenditures for the overall program, followed by results attributed to utility funding. Various agency-level results and measure-specific results are presented in the final part.

PROGRAM SAVINGS AND EXPENDITURES

A total of 1,473 dwelling units were weatherized to completion during calendar year (CY) 2016, compared to 1,514 in 2015. First-year savings totaled 306,300 therms; 1,002,100 kWh electricity; 30,600 gallons of propane; and 977 gallons of fuel oil. First-year peak demand savings totaled 3,180 peak-day therms, 300 kW summer demand, and 260 kW winter demand.

First year natural gas savings are shown for the past ten years, by major measure groups in Figure 1.1 (raw data is listed in Appendix B as Fig 1.1).

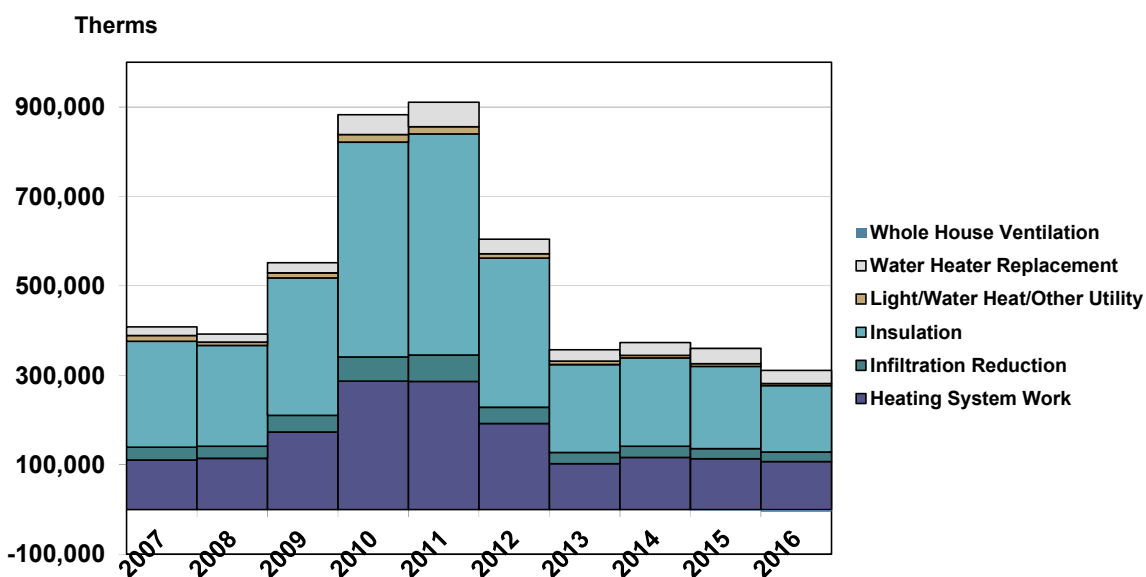


Figure 1.1 First Year Energy Savings (therms) – Program

Taken together, insulation and heating system replacement work accounted for 84% of gas savings (Table 1.1). Note that the portion of infiltration reduction savings (7% of gas savings) shown here is attributed to weather-stripping and leak sealing -- the bulk of air leakage savings are allocated to dense packed wall and cavity insulation and are included in insulation savings shown for those measures.

Table 1.1 Gas Measure Savings by Major Measure Category

Measure Group	Savings (therms)	Pct
Heating System Work	107,412	35.1%
Infiltration Reduction	20,948	6.8%
Insulation	148,756	48.6%
Light/Water Heat/Other Utility	4,403	1.4%
Water Heater Replacement	29,679	9.7%
Whole House Ventilation	-4,936	-1.6%

Electricity savings totaled 1,102,100 kWh for the program overall (Figure 1.2, raw data in Appendix B listed as Fig 1.2).

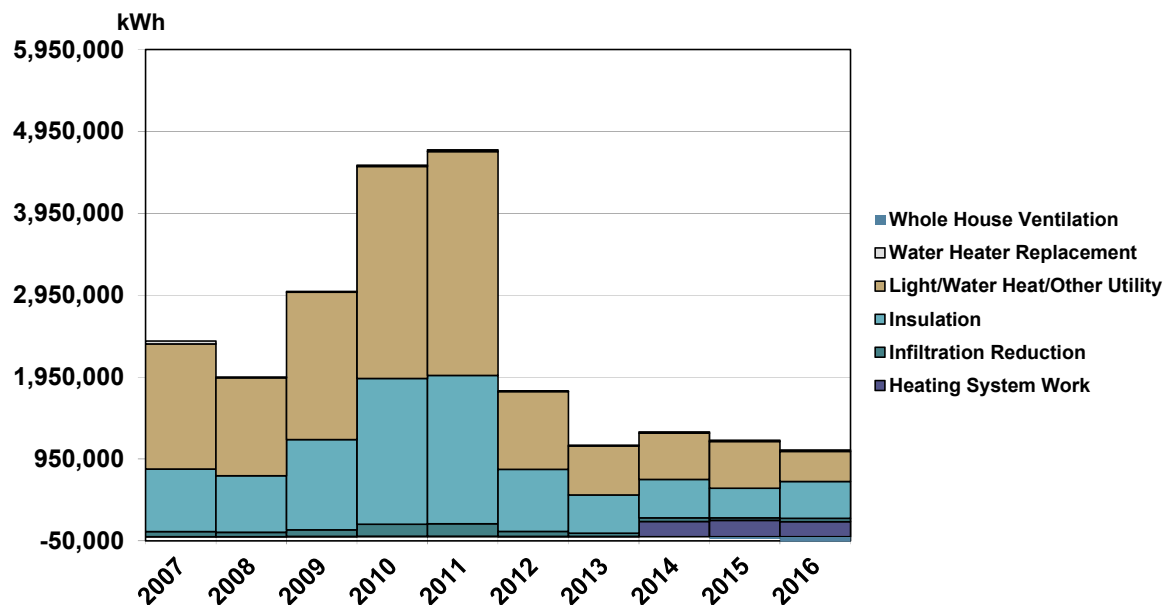


Figure 1.2 First Year Energy Savings (kWh) – Program

Insulation measures were credited with 45% of electricity savings (includes cooling savings and heating savings for homes with electric heat). Lighting, electric water measure, and refrigerator and freezer replacements and removals accounted for 37%. Other heating system work (primarily electric heating system and heat pump replacements) were responsible for 19% of savings.

Table 1.2 Electricity Savings by Major Measure Category

Measure Group	Savings (kWh)	Pct
Heating System Work	185,546	18.5%
Infiltration Reduction	41,401	4.1%
Insulation	446,239	44.5%
Light/Water Heat/Other Utility	371,009	37.0%
Water Heater Replacement	17,269	1.7%
Whole House Ventilation	-59,517	-5.9%

Program expenditures for materials, labor, and support totaled \$19,903,775, increasing by 7 percent from \$18,615,919 spent in 2015 (see Figure 1.3; raw data is listed in Appendix B as Fig 1.3).

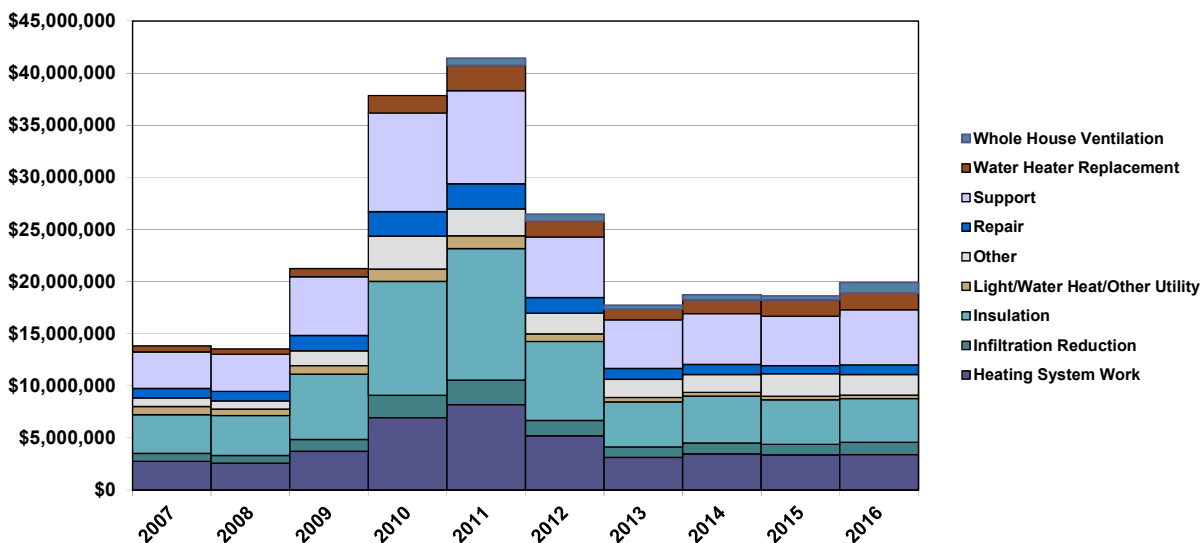


Figure 1.3 Overall Program Expenditures

Expenditures by major measure groups are shown in Table 1.3. Program support, which funds agency overhead and administration, accounted for 26.6% of expenditures. Efficiency measures, including heating system work (replacements, repairs, and tune-ups), infiltration reduction, insulation, lighting and water heater efficiency measures, and water heater replacement accounted for 53.6% of expenditures. The remainder of costs including repairs, whole house ventilation, and health and safety measures which together total 19.8%.

Table 1.3 Expenditures by Major Measure Category

Measure Group	Expenditure	Pct
Heating System Work	\$3,390,913	17.0%
Infiltration Reduction	\$1,182,412	5.9%
Insulation	\$4,188,388	21.0%
Light/Water Heat/Other Utility	\$328,738	1.7%
Other	\$1,982,511	10.0%
Repair	\$930,041	4.7%
Support	\$5,302,237	26.6%
Water Heater Replacement	\$1,579,574	7.9%
Whole House Ventilation	\$1,018,951	5.1%

The nominal average household expenditures for all dwellings weatherized in 2016 increased by 10% to \$13,542 (Figure 1.4, raw data is listed in Appendix B listed as Fig 1.4).

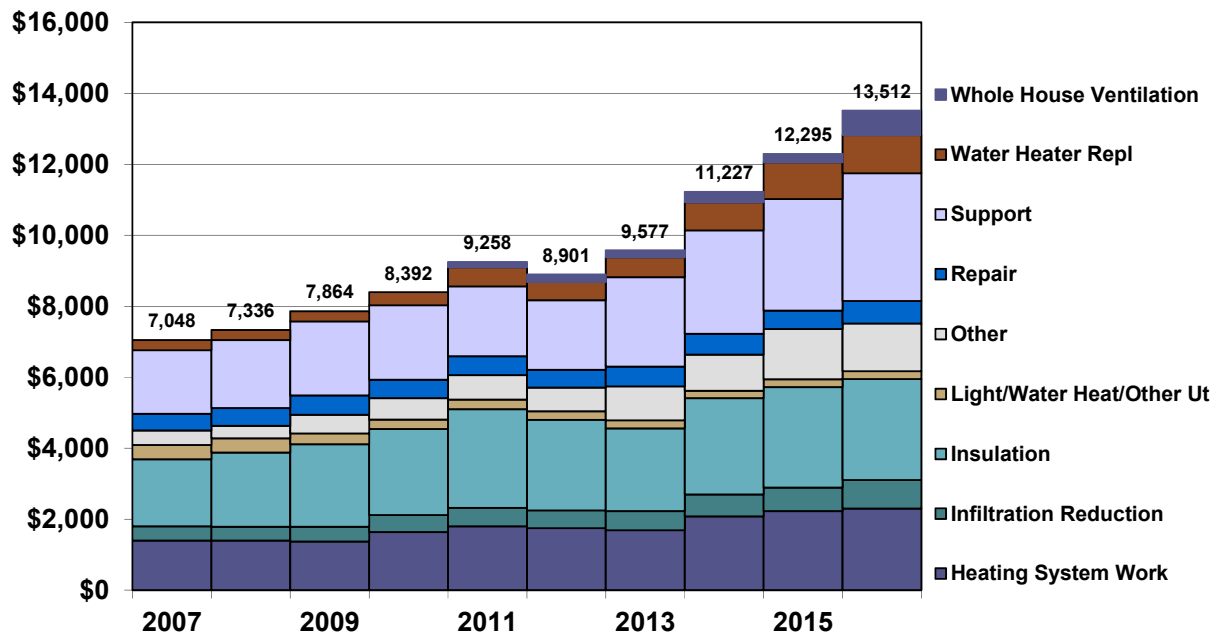


Figure 1.4 Average Program Expenditures per Housing Unit

CLIENT ENERGY BILL SAVINGS BY FUEL TYPE AND END-USE

Fuel prices were taken from the Department of Energy's Energy Information Agency (EIA) state monthly average prices for electricity and natural gas, and seasonal fuel costs for propane and fuel oil. The savings for each measure are allocated by month so that the estimated bill savings reflect the seasonal fluctuations in fuel prices. State taxes are included and electricity and gas prices are adjusted to include only the variable cost of an additional kWh or therm (fixed portion of the bills for customer charges are

removed). Electricity prices increased by 2.1% from 2015, gas prices increased by 7%, fuel oil prices increased by 19%, and propane prices dropped by 33%.

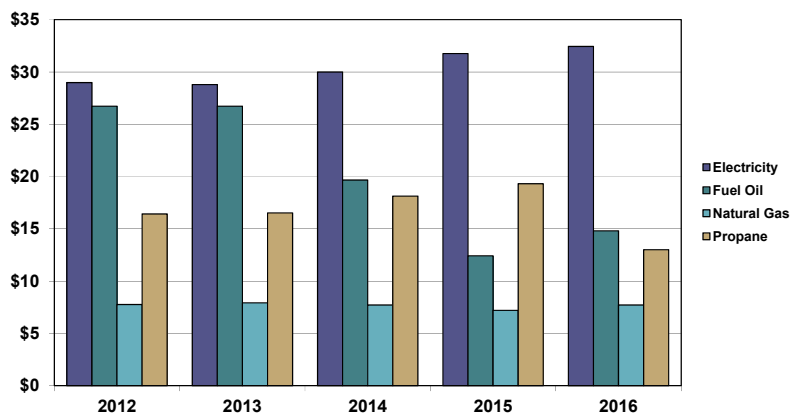


Figure 1.5 Average Fuel Cost per MBtu (Nominal Dollars)

The nominal first year client energy bill savings totaled \$385,800 (Figure 1.6, raw data in Appendix B listed as Fig 1.6).

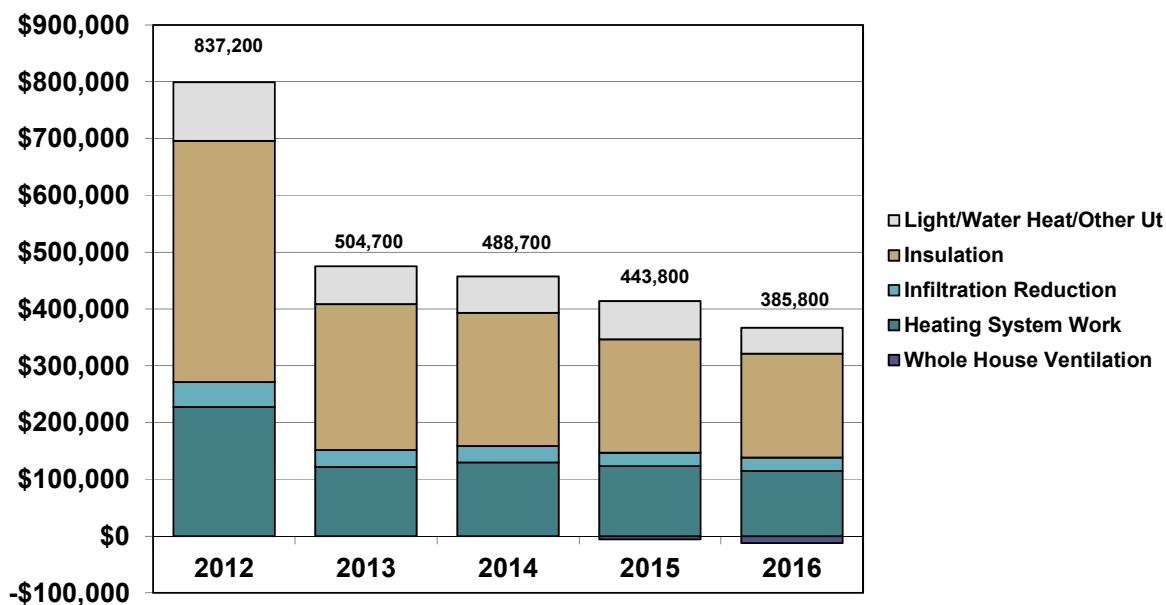


Figure 1.6 First Year Client Fuel Cost Savings (Nominal Dollars)

Insulation, infiltration reduction, and heating system work accounted for 83% of client bill savings (Table 1.6). Lighting, water heating measures, and refrigeration measures accounted for 12%.

Table 1.6 First Year Client Fuel Cost Savings (Nominal Dollars)

Measure Group	Bill Savings	Pct
Whole House Ventilation	-\$12,094	-3.1%
Heating System Work	\$114,855	29.8%
Infiltration Reduction	\$23,425	6.1%
Insulation	\$183,128	47.5%
Light/Water Heat/Other Ut	\$45,384	11.8%
Water Heater Replacement	\$31,142	8.1%

First-year client fuel bill savings averaged \$262 (Figure 1.7), declining from \$293 in 2015.

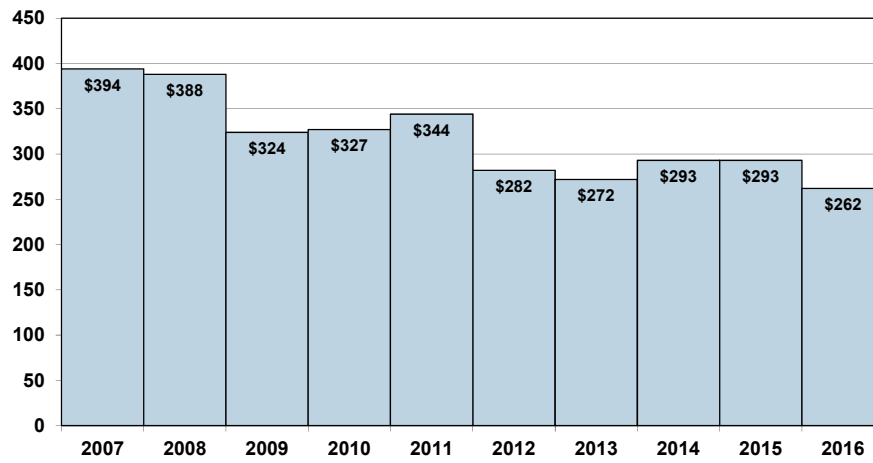


Figure 1.7 Average Annual Client Fuel Bill Savings per Housing Unit

Natural gas savings provided 61% of client bill savings, electricity accounted for 29%, propane accounted for 10%, and fuel oil provided less than 1%.

Approximately 46% of client bill savings are attributable to the heating impacts of shell measures (insulation and infiltration reduction), and 25% was due to heating system work. Taken together, heating impacts from shell improvements and heating system measures accounted for 71% of total client bill savings. Cooling savings accounted for another 10% and lighting, refrigeration, and water heater measures accounted for 10%.

Table 7 provides a breakdown of first year energy and bill savings, and expenditures by housing type and main heat fuel. Expenditures for site built single family units averaged over \$13,000 for gas and propane heated units, and had total savings of \$260 for gas-heated units and \$371 for propane-heated units. Costs for fuel-oil and electrically-heated site built homes were a little more than \$11,000 with bill savings of \$377 and \$290, respectively.

Total costs were highest for propane heated mobile homes at \$14,924 per unit and had first year bill savings totaling \$250. Gas-heated mobile homes averaged slightly less than \$13,000 and saved \$164 per

unit. Costs were lower for fuel oil and electrically heated mobile homes (\$7053 and \$8,556), and saved a total of \$236 (fuel oil) and \$46 (electrically-heated).

Expenditures for multi-family units heated with gas averaged \$12,527 and had first-year client bill savings of \$233. Electrically-heated multi-family unit spending averaged \$6,078 and saved \$116.

Table 1.7 First Year Energy and Bill Savings, and Expenditures by Housing Type and Main Heat Fuel

	Number of Units	Main Heat Savings (therms, gals)	Electricity Savings (kWh)	Main Heat Bill Savings	Electricity Bill Savings	Expenditures
Site Built Single Family						
Gas	1,109	252	588	\$194	\$66	\$13,871
Propane	115	250	650	\$298	\$73	\$13,093
Fuel Oil	6	148	646	\$304	\$73	\$11,415
Electricity	68	-	2,780	-	\$290	\$11,184
Mobile Home						
Gas	100	154	422	\$118	\$46	\$12,968
Propane	12	152	620	\$181	\$69	\$14,924
Fuel Oil	1	90	468	\$185	\$51	\$7,053
Electricity	4	-	440	-	\$46	\$8,556
Multi-Family						
Gas	49	241	422	\$186	\$47	\$12,527
Propane	-	-	-	-	-	-
Fuel Oil	-	-	-	-	-	-
Electricity	9	-	1,114	-	\$116	\$6,078

UTILITY SAVINGS AND EXPENDITURES

The utilities funded measures in 1,122 dwellings, with first year savings totaling 197,500 therms and 591,300 kWh. These measures reached 76% of all units weatherized by the program, and accounted for 64.5% of gas savings and 59% of electricity savings.

Figure 1.8 provides a ten year history of gas savings attained by utility-funded measures (Figure 1.8, raw data in Appendix B listed as Fig 1.8).

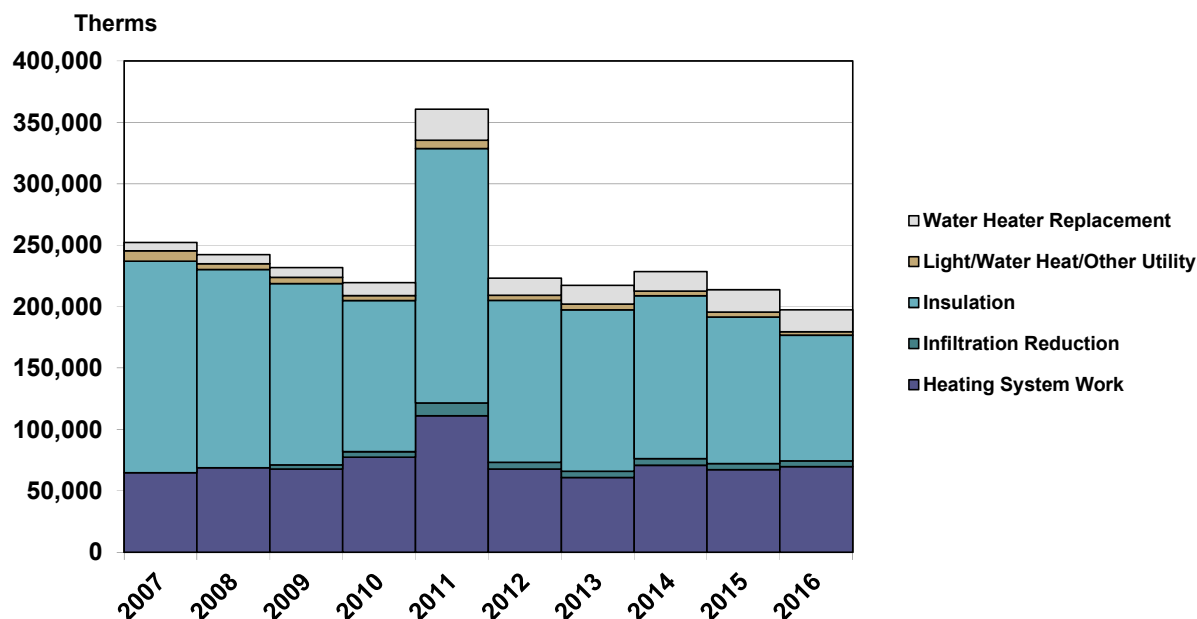


Figure 1.8 First Year Energy Savings (therms) – Utility only

Utility expenditures on gas measures were mostly due to insulation (52% of expenditures) and heating system work (35%). The heating system work was almost entirely for replacements, all of which were specified as replacements for efficiency (Table 1.8).

Figure 1.8 First Year Energy Savings (therms) by Measure Group – Utility only

Measure Group	Savings (therms)	Pct
Heating System Work	69,667	35.3%
Infiltration Reduction	4,784	2.4%
Insulation	102,315	51.8%
Light/Water Heat/Other Utility	2,809	1.4%
Water Heater Replacement	17,885	9.1%

The ten year history of electricity measure savings are shown in Figure 1.9, with first year savings totaling 591,300 kWh in 2016 (Figure 1.9, raw data in Appendix B listed as Fig 1.9).

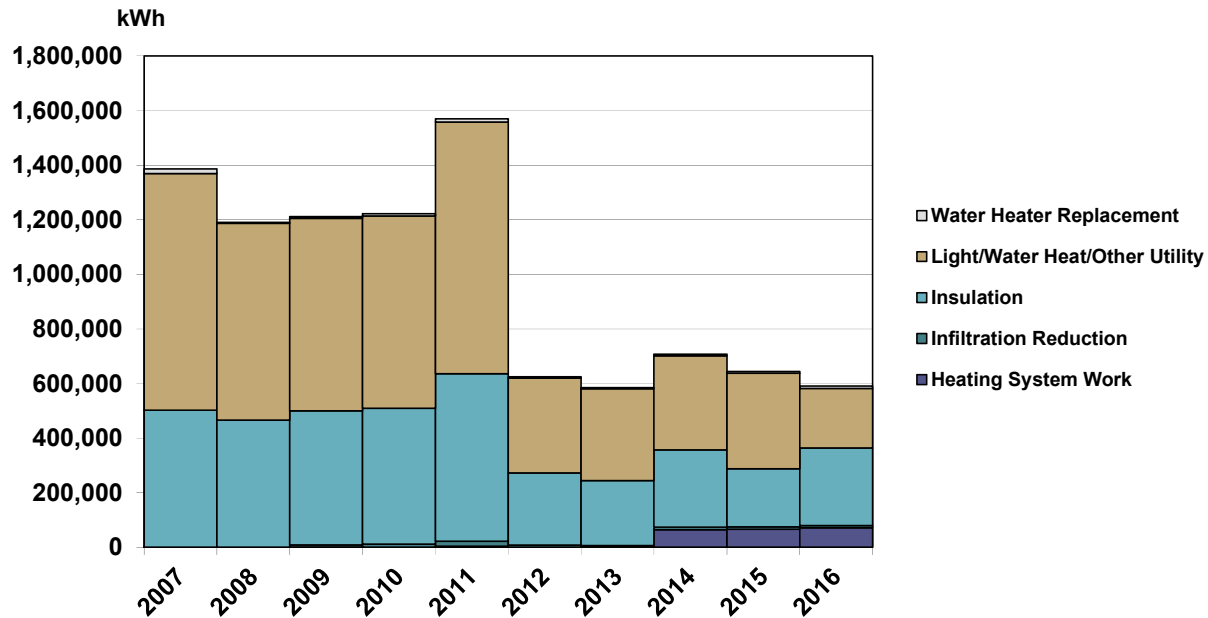


Figure1. 9 First Year Energy Savings (kWh) – Utility only

The electricity savings attributed to insulation include cooling savings and heating savings in units with electric main heat; these accounted for 48% of electricity savings. Another 37% of electricity savings were due to lighting, refrigerator replacements or removals, electric water heater measures (Table 1.9).

Table 1.9 First Year Energy Savings (kWh) by Measure Group – Utility only

Measure Group	Savings (kWh)	Pct
Heating System Work	71,506	12.1%
Infiltration Reduction	8,430	1.4%
Insulation	283,722	48.0%
Light/Water Heat/Other Utility	218,339	36.9%
Water Heater Replacement	9,119	1.5%

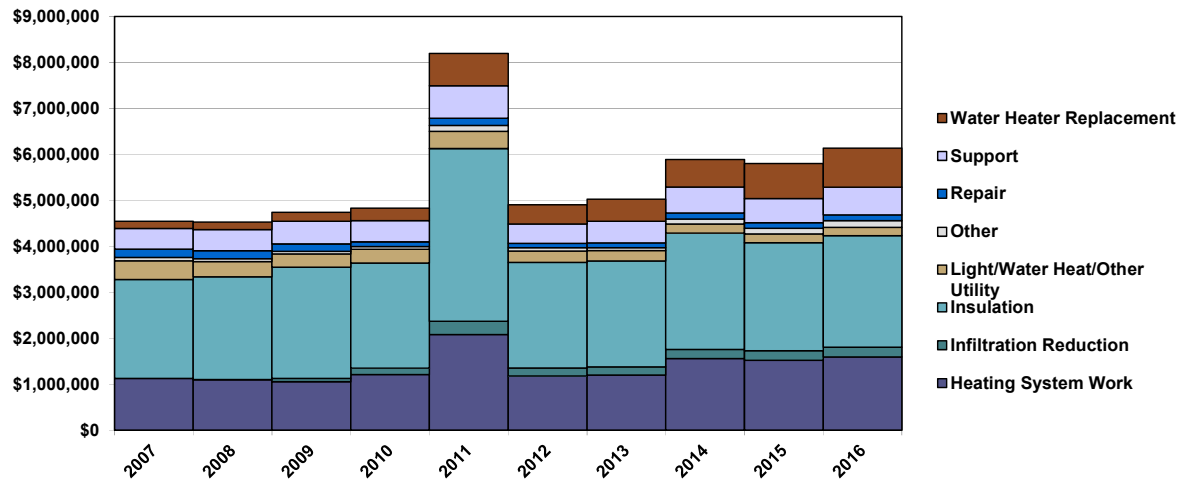


Figure 1.10 Utility Expenditures

The utilities spent \$6,134,533 for program measures, labor, and support in 2016, 5.7% more than in 2015 (\$5,801,658). (Figure 1.10, raw data is listed in Appendix B as Fig 1.10). Utility expenditures accounted for 30.8% of the total low-income program expenditures.

Table 1.9 Expenditures by Measure Group – Utility only

Measure Group	Expenditure	Pct
Heating System Work	\$1,594,196	26.0%
Infiltration Reduction	\$212,265	3.5%
Insulation	\$2,422,997	39.5%
Light/Water Heat/Other Utility	\$180,770	2.9%
Other	\$147,766	2.4%
Repair	\$123,880	2.0%
Support	\$602,760	9.8%
Water Heater Replacement	\$849,809	13.9%

In addition, the utilities spent \$274,662 on program administration. Utility expenditures totaled \$6,409,195 including spending on program measures, labor, support, and administration.

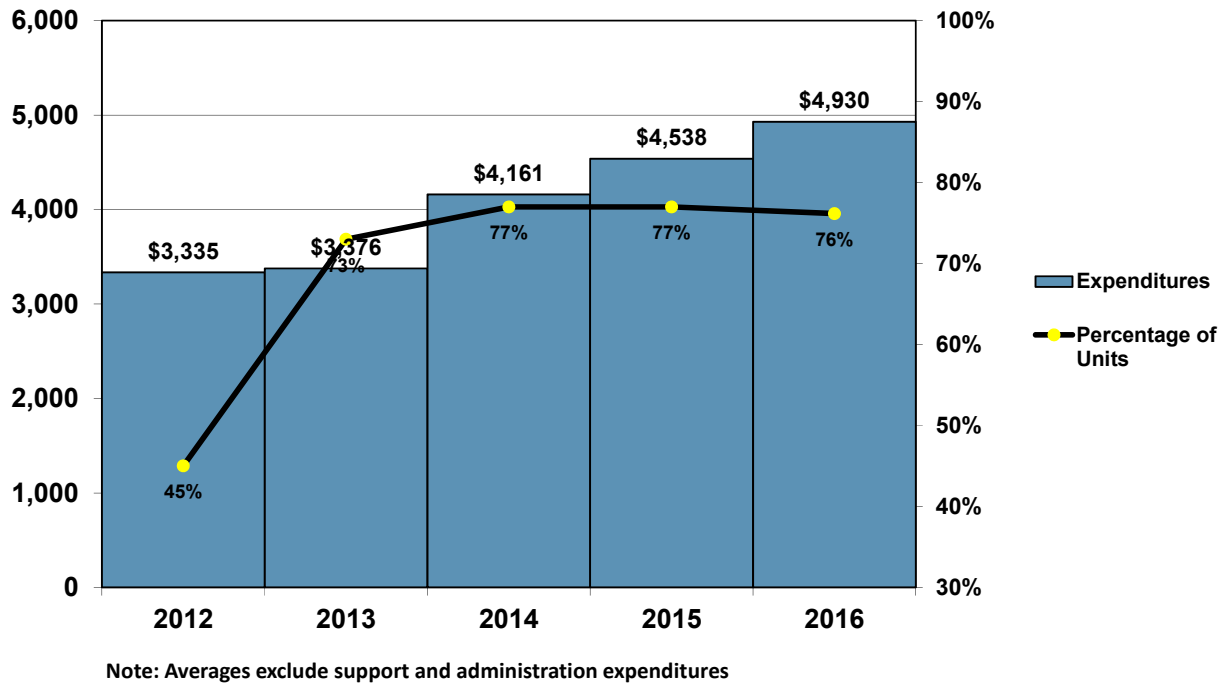


Figure 1.11 Average Utility Spending on Materials and Labor (excluding Support and Administration), and Percentage of Homes Receiving Utility-Funded Measures with Impacts

Figure 1.11 provides the average utility funding for labor and materials (excluding support and administration) and percentages of dwellings with utility funding for the past five years. The utilities have maintained funding for 76-77% of all units completed by the program for the past three years.

Table 1.11 provides details of utility expenditures and the percentage of units weatherized by the program for each utility.

Table 1.11 Utility Expenditures for Measures, Labor, and Support, and Counts of Units with Impacts

Utility	Total Expenditures		Counts of Dwellings With Energy Impacts			
	Excluding Program Support	With Program Support	Electric Impacts	Pct of Prg	Gas Impacts	Pct of Prg
Alliant IPL	\$ 2,728,800	\$ 3,032,700	568	38.8%	419	33.6%
Black Hills Corp	\$ 555,700	\$ 614,700			130	10.4%
MidAmerican	\$ 2,247,200	\$ 2,487,200	387	26.5%	370	29.6%
Total Utilities	\$ 5,531,800	\$ 6,134,500	956	65.3%	919	73.6%

The savings and client bill savings for utility-funded measures are summarized in Table 1.12, by utility.

Table 1.12 First Year Fuel and Client Bill Savings Impacts from Utility-Funded Measures

Utility	First Yr Fuel Savings	Pct of Prg	Summer Demand Savings	Pct of Prg	Winter Demand Savings	Pct of Prg	First Year Fuel Cost Savings	Pct of Prg
Electricity	(kWh)		(kW)		(kW)			
Alliant IPL	310,100	30.9%	100	32.7%	70	27.0%	\$ 34,600	31.2%
MidAmerican	280,800	28.0%	80	27.3%	74	28.5%	\$ 31,100	28.1%
Total Electric Utilities	591,300	59.0%	180	60.0%	143	55.6%	\$ 65,800	59.3%
Gas	Therms				Peak Day Therms			
Alliant IPL	93,200	30.4%			980	30.7%	\$ 72,000	30.5%
Black Hills Corp	18,800	6.2%			190	6.1%	\$ 14,600	6.2%
MidAmerican	85,500	27.9%			890	27.9%	\$ 66,300	28.1%
Total Gas Utilities	197,500	64.5%			2,060	64.7%	\$ 153,000	64.7%

Utility-funded measures yielded first-year client bill savings of \$218,700, averaging \$195 per dwelling that received utility-funded measures. Electricity bill savings from utility-funded measures averaged \$69 per household for utility-funded electricity measures. Gas bill savings from utility-funded measures averaged \$166 for households with utility-funded gas measures.

Table 1.13 provides the cost of energy savings by housing type and utility for energy savings measures. The cost of conserved energy for across all housing types ranged from \$21.15 to \$27.32 per therm (first year savings) and \$1.15 to \$1.56 per kWh for the utilities. The cost of energy savings for mobile homes is significantly higher than for single family site-built or multi-family units for all fuels.

Table 1.13 Cost of First-Year Energy Savings from Utility-Funded Measures

	Cost of Gas Savings (\$/therm)	Number of Units	Cost of Elec Savings (\$/kWh)	Number of Units
Alliant-IPL				
Overall	\$22.16	419	\$1.56	569
Site-Built	\$21.82	376	\$1.52	493
Mobile Home	\$37.27	22	\$2.38	41
Multi-family	\$23.21	21	\$2.01	35
Black Hills Corp				
Overall	\$27.32	130	-	
Site-Built	\$27.91	114	-	
Mobile Home	\$32.18	2	-	
Multi-family	\$23.88	14	-	
MidAmerican				
Overall	\$21.15	371	\$1.15	387
Site-Built	\$20.78	329	\$1.12	354
Mobile Home	\$29.20	35	\$1.92	25
Multi-family	\$22.95	7	\$0.82	8

Table 1.14 provides the percentages of total expenditures for measures that were funded by the utilities. The utilities funded the majority of insulation, heating system and water heater replacements, water heater efficiency measures, lighting and refrigerator replacements, programmable thermostats, and water heater ventilation.

Table 1.14 Utility Funding Percentages by Measure

Measure	Total	Utility	Utility Percentage
Wall Insulation	\$1,534,302	\$982,226	64.0%
Attic Insulation	\$1,509,125	\$949,899	62.9%
Kneewall Insulation	\$166,030	\$101,887	61.4%
Floor/Crawlspace Insulation	\$437,676	\$261,783	59.8%
Bandjoist Insulation	\$150,435	\$85,098	56.6%
Infiltration Reduction	\$1,182,412	\$212,265	18.0%
High Efficiency Htg Sys Repl.	\$2,891,515	\$1,543,056	53.4%
Electric Htg Sy/Ht Pump Repl.	\$102,216	\$27,947	27.3%
Pipe Wrap	\$18,774	\$10,579	56.4%
Faucet Aerator	\$2,480	\$1,546	62.4%
Shower Head	\$1,969	\$1,210	61.5%
Water Heater Replacement - Hi Eff	\$1,579,574	\$849,809	53.8%
Compact Fluorescent Lighting	\$58,937	\$37,325	63.3%
Exchange Refrigerator	\$211,121	\$115,218	54.6%
Exchange Freezer	\$35,343	\$14,942	42.3%
Repairs	\$930,041	\$123,880	13.3%
Programmable Thermostat	\$5,185	\$5,085	98.1%
Htg Sys Tune/Clean	\$82,412	\$18,108	22.0%
Htg Sys Ventilation	\$179,614	\$79,966	44.5%
Water Heater Ventilation	\$102,276	\$54,473	53.3%
Other	\$3,420,103	\$55,470	1.6%
Overall Excluding Support	\$14,601,538	\$5,531,773	37.9%
Support	\$5,302,237	\$602,760	11.4%
Overall Including Support	\$19,903,775	\$6,134,533	30.8%

Section 3 of this report, Detailed Spending and Impact Profiles by Funding Entity provides detailed result tables for the overall program, state funding, and for each of the three funding utilities. These tables include counts of installations and totals and average energy savings, demand impacts, and program expenditures by measure

EXPENDITURES AND SAVINGS BY AGENCY AND MEASURE

Figure 1.12 shows the average annual energy cost savings by agency. The series are arranged from left to right in the chart according to left to right and top to bottom and in the legend, e.g., Bldg Shell Cooling, then Bldg Shell Heating, then Heating system, etc.

Savings attained by each agency were adjusted according to results of the natural gas and electricity fuel consumption analyses, detailed in Section 2 of this report. The estimated impacts for propane and fuel oil were adjusted using the same factors as those used for natural gas.

Bear in mind that various factors affect the values shown in this chart, factors beyond quality or intensity of weatherization treatment (an example is climate variations within the state). Consequently, these results should not be used as a basis for comparing the quality, attention to detail, dedication, or other factors of agency performance.

The wide variation in results across agencies is typical of what we've observed in past years.

The statewide average client bill savings was \$262 per dwelling. The average first-year client bill savings widely varied across agencies, from a low of \$142 per dwelling for NE Iowa to a high of \$360 for CAA Siouxland and \$358 for Southeast Iowa.

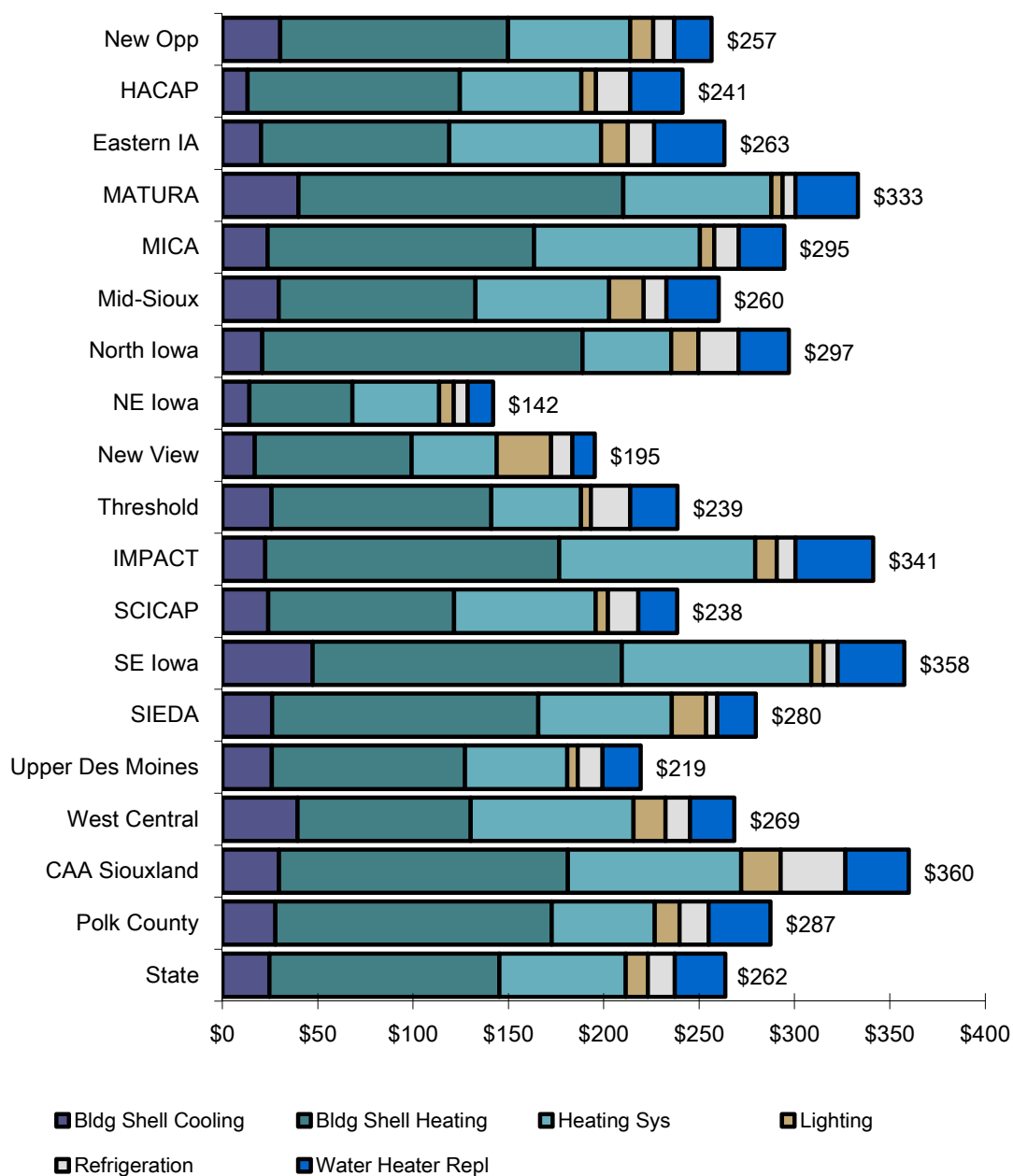


Figure 1.12 Average Annual Fuel Bill Savings per Housing Unit by Agency

Figure 1.13 shows the average expenditures for all households with impacts, ranging from a low of \$6,910 for Northeast Iowa to \$17,370 for IMPACT. The statewide average expenditure was \$13,512 per dwelling unit.

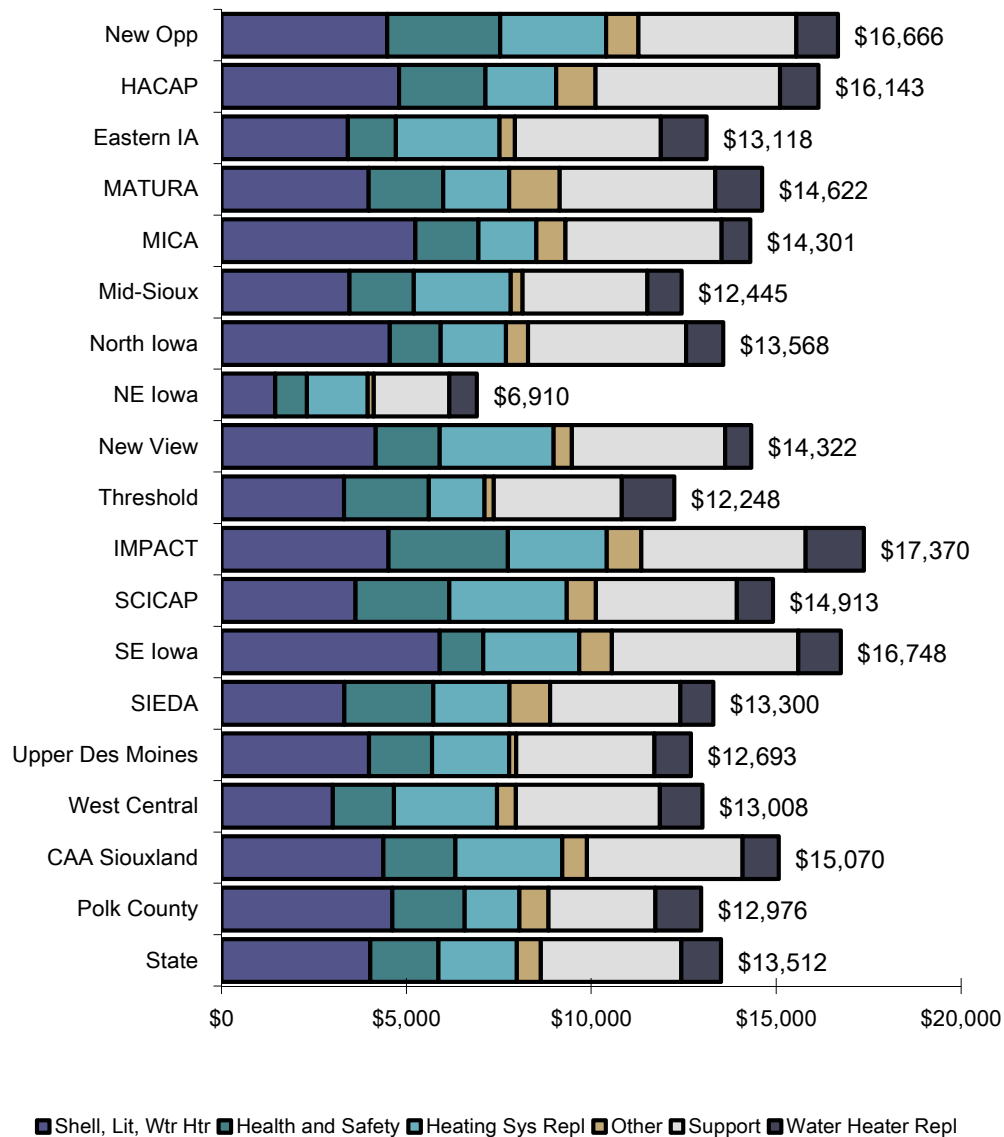


Figure 1.13 Average Expenditures per Housing Unit by Agency

The average installation rates, costs, and savings for energy efficiency and heating and water heating system replacement measures for calendar year programs 2014-2016 are shown in Figures 1.14a and 1.14b.

The installation rates of nearly all insulation measures and infiltration reduction in the 2015 program have decreased slightly from the prior year (see Figure 1.14a, left chart).

Condensing heating system replacement rates have increased for the past three years, and were at 66% in 2016.

The installation rates of water heater efficiency measures decreased with the exception of pipe insulation. The rates of high-efficiency water heater replacements increased to 69% from 65% in 2015.

Refrigerator and freezer replacement rates increased by a small percentage, to 19% and 5% respectively.

Figure 1.14a, right chart, shows that the average measure costs. Insulation costs increased 6% from the prior year. Condensing heating system costs decreased by 1%. Costs for non-condensing heating systems, installed where condensing units cannot be installed or where boilers are used, increased by 19%. The cost of high efficiency water heater replacements was essentially unchanged (no standard efficiency water heaters were installed in 2016).

The average first-year energy gas and electricity savings for each major measure is shown in Figures 1.14b.

The average natural gas savings by measure declined over the past three years for wall insulation and ceiling/attic insulation. Floor/crawlspace savings increased slightly.

Gas savings for condensing heating system decreased slightly to 118 therms in 2016, from 127 in 2015. Savings for non-condensing heating systems increased slightly.

The average electricity savings from insulation increased: wall insulation savings increased by 30% and ceiling/attic insulation increased by 40% from 2015. These differences are driven in part by year-to-year variation in housing stock for the few housing units that use electric main heat.

Savings from refrigerator replacements was lower, at 508 kWh in 2016, and higher for freezer replacements (542 kWh in 2016).

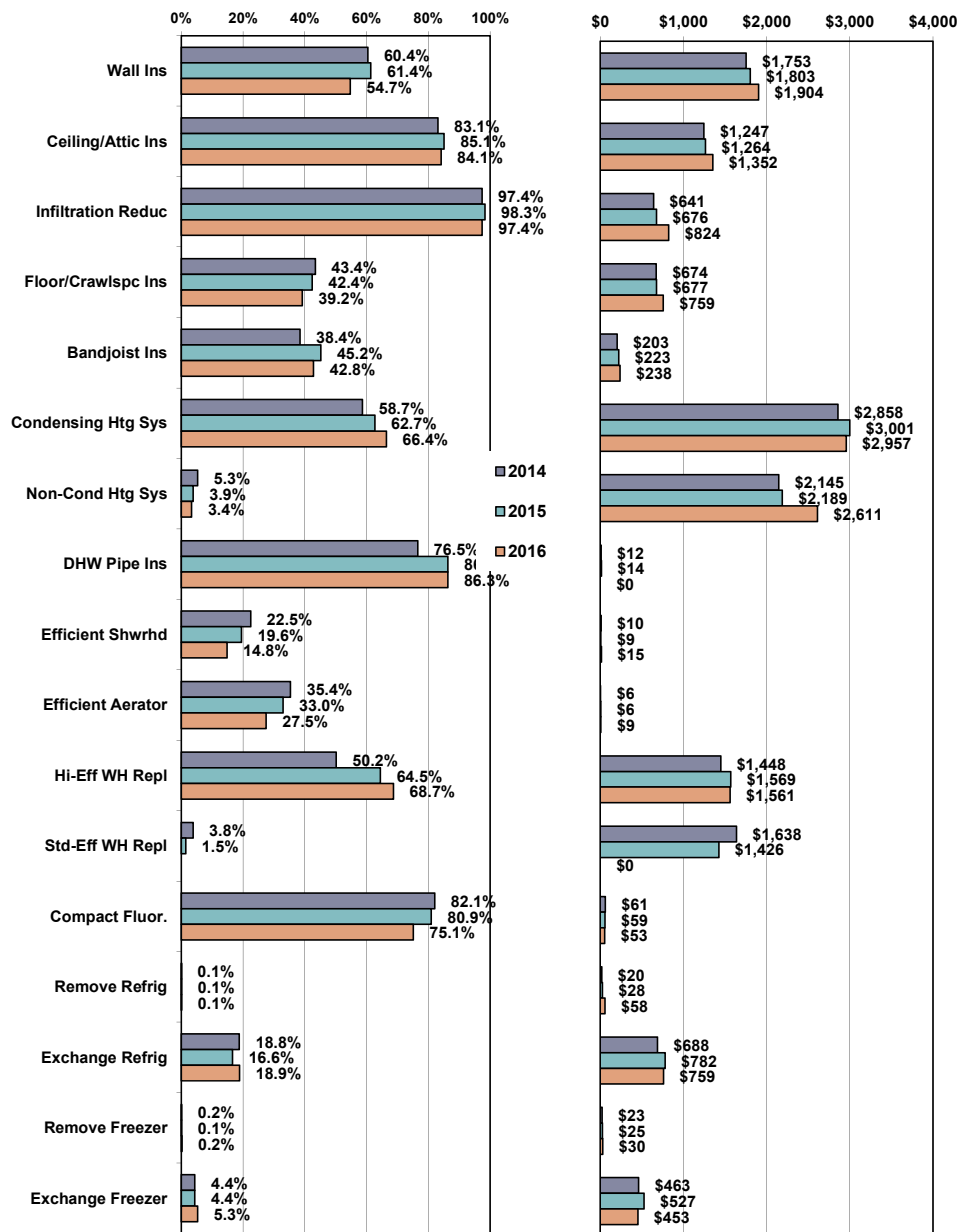


Figure 1.14a Average Installation Rates and Measure Costs of Efficiency Measures, Heating System and Water Heating Replacements

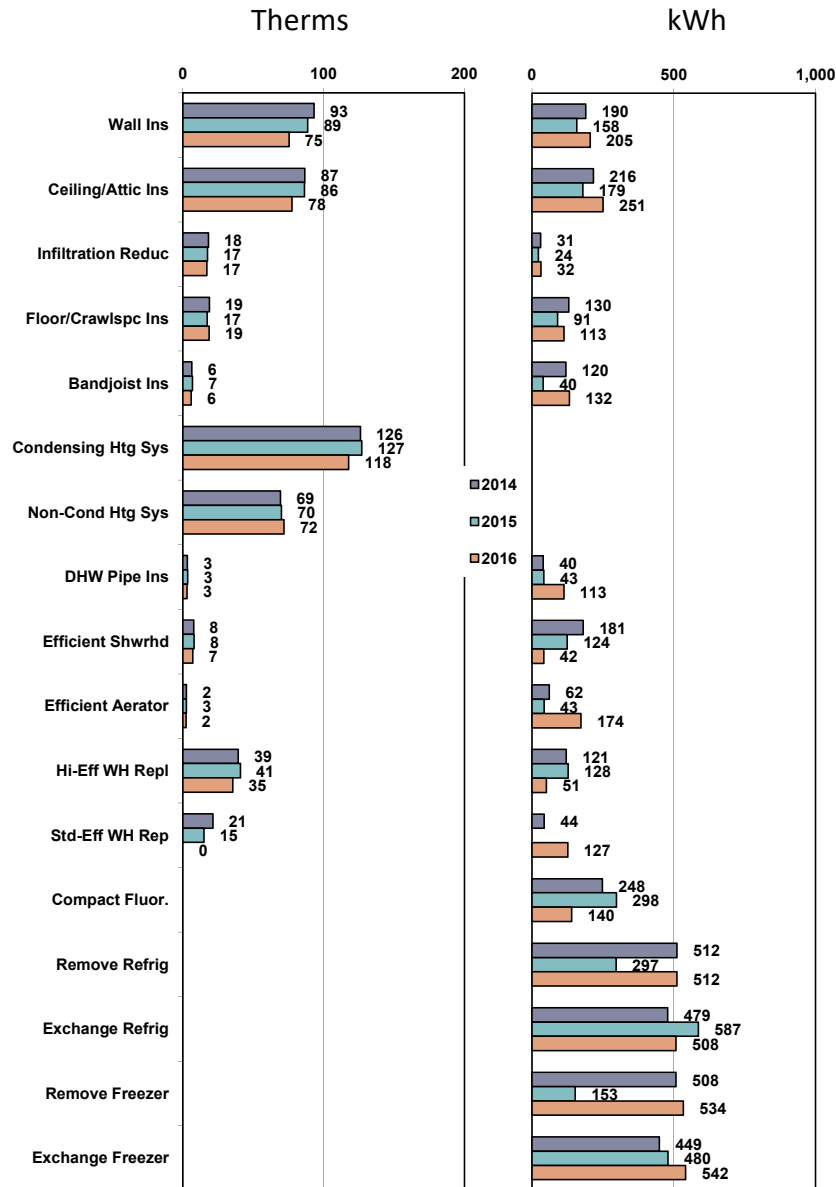


Figure 1.14b Average Gas and Electricity Savings of Efficiency Measures, Heating System and Water Heating Replacements

Tables 1.15 and 1.16 provide tabular data corresponding to data shown in Figure 1.14a and but over a five year period. Table 1.15 provides a listing of the percentage of households receiving measures. Small percentage changes from the previous year are to be expected, and typically correct for lower or higher installation rates of the prior year. The year over year (recent year) change tends to be greatest for measures with very low installation rates and/or savings which are not indicative of major changes in the installation protocols for these measures or program impacts

Table 1.15 Installation Rates of Measures

Measure	2012	2013	2014	2015	2016	Recent Year Change (%)
<i>Insulation and Infiltration Reduction Measures</i>						
Wall Insulation	62.9	59.8	60.4	61.4	55.1	-8.9%
Ceiling/Attic Insulation	84.0	82.0	83.1	85.1	84.7	1.9%
Floor/Crawlspace Insulation	43.3	42.8	43.5	42.4	39.4	-9.2%
Bandjoist Insulation	48.9	38.4	39.6	45.2	43.1	9.0%
Infiltration Reduction	98.4	97.5	97.4	98.3	98.1	0.7%
<i>Heating System Measures</i>						
Htg. Sys. Replacement	60.5	58.4	64.0	66.6	70.3	9.8%
High Eff Htg Sys Repl	54.2	50.6	58.7	62.7	66.8	13.9%
Std/Unspec Eff Htg Sys Repl	6.3	7.8	5.3	3.9	3.4	-35.3%
Htg. Sys. Tune and Clean	40.0	39.5	32.9	27.5	26.3	-20.0%
Heating System Safety Check	21.3	15.0	13.1	15.2	9.3	-29.0%
Heating System Ventilation	9.5	33.3	24.4	43.4	52.9	117.1%
<i>Water Heater Measures</i>						
Pipe Wrap	75.7	75.0	76.6	86.3	86.9	13.4%
Shower Head	22.5	21.7	22.5	19.6	14.9	-33.8%
Faucet Aerator	35.2	33.0	35.4	33.0	27.7	-21.8%
Water Heater Replacement	45.4	48.2	54.1	65.9	69.2	27.9%
Hi-Eff Wtr Htr Repl.	27.1	38.9	50.2	64.5	69.2	37.7%
Std-Eff Wtr Htr Repl.	18.3	9.4	3.8	1.5	-	-
Water Heater Ventilation	22.4	20.3	29.8	31.5	39.8	33.6%
Water Heater Repair	11.0	9.7	7.7	5.4	6.5	-16.1%
<i>Lighting Measures</i>						
Compact Fluorescent Bulbs	84.9	86.1	82.9	81.6	75.6	-8.8%
<i>Refrigeration Measures</i>						
Refrigerator Removal	0.1	0.3	0.1	0.1	0.1	127.8%
Refrigerator Exchange	21.1	21.4	18.8	16.6	19.0	0.8%
Freezer Removal	0.1	0.1	0.2	0.1	0.2	13.9%
Freezer Exchange	5.5	4.7	4.4	4.4	5.3	20.0%
<i>Health and Safety (other than heating & water heating measures listed above)</i>						
CO Detector	77.3	81.1	84.4	85.2	90.9	7.7%
Smoke Detector	48.8	59.9	59.8	61.2	65.3	9.2%
Exhaust Ventilation	83.5	80.4	82.4	84.5	89.3	8.4%
Fuses	0.6	0.1	0.5	0.9	0.7	42.3%
<i>Repairs</i>	87.6	88.4	87.3	88.1	87.9	0.7%

Table 1.16 shows details of the average installed costs for each measure over the past 5 years. As with the installation rates, the greatest changes tend to occur for measures with few installations and/or small costs.

Table 1.16 Average Measure Costs

Measure	2012	2013	2014	2015	2016	Recent Year Change (%)
<i>Insulation and Infiltration Reduction Measures</i>						
Wall Insulation	1,587	1,466	1,753	1,803	1,904	8.6%
Ceiling/Attic Insulation	1,096	1,124	1,247	1,264	1,352	8.4%
Infiltration Reduction	505	556	641	676	824	28.5%
Floor/Crawlspace Insulation	725	683	674	677	759	12.5%
Bandjoist Insulation	157	164	203	223	238	17.7%
<i>Heating System Measures</i>						
Htg. Sys. Replacement						
Condensing Htg Sys Repl	2,460	2,388	2,858	3,001	2,957	3.4%
Non-Cond Htg Sys Repl	2,077	2,766	2,145	2,189	2,611	21.7%
Htg. Sys. Tune and Clean	147	155	219	186	214	-2.3%
Heating System Safety Check	119	135	138	145	149	8.4%
Heating System Ventilation	131	238	236	236	232	-1.8%
<i>Water Heater Measures</i>						
Pipe Wrap	5	5	12	14	15	18.7%
Shower Head	9	9	10	9	9	-5.3%
Faucet Aerator	4	4	6	6	6	10.6%
Water Heater Replacement						
Hi-Eff Wtr Htr Repl.	1,197	1,175	1,448	1,569	1,561	7.8%
Std-Eff Wtr Htr Repl.	1,037	1,097	1,638	1,426	-	-
Water Heater Ventilation	226	213	237	188	175	-26.1%
Water Heater Repair	97	102	115	122	130	12.4%
<i>Lighting Measures</i>						
CFL Bulbs (avg spent per home)	62	60	63	59	53	-14.8%
<i>Refrigeration Measures</i>						
Refrigerator Removal	25	18	20	28	58	187.5%
Refrigerator Exchange	730	698	688	782	759	10.4%
Freezer Removal	39	25	23	25	30	28.6%
Freezer Exchange	532	498	463	527	453	-2.1%
<i>Health and Safety (other than heating & water heating measures listed above)</i>						
CO Detector	52	49	57	62	66	14.6%
Smoke Detector	45	47	52	59	54	4.0%
Exhaust Ventilation	452	659	734	830	881	20.0%
Fuses	108	22	103	82	128	24.4%
<i>Repairs</i>	573	636	668	589	723	8.2%
<i>Support</i>	2,424	2,631	3,106	3,452	3,755	20.9%
<small>Note: Kneewall insulation was reported with wall insulation prior to 2007, it is now bundled with Ceiling./Attic Insulatic</small>						

SAVINGS OF WATER HEATER, LIGHTING, AND REFRIGERATION MEASURES

Table 1.17 shows the installation rates for energy efficiency measures other than space heating or cooling. These measures include water heater efficiency measures, lighting, and refrigeration measures. Statewide, client bill savings averaged \$31 for these measures. The highest average bill savings were attained by North Iowa and New View, averaging over \$40 per unit. Matura, Northeast Iowa and Southeast Iowa averaged less than \$20 per dwelling.

Table 1.17 Installation Rates and Savings of Baseload Measures

Agency	Water Heating			Lighting	Refrigeration				Average First Year Bill
	Pipe Wrap	Shower- head	Faucet Aerator		Ex- change Refrig	Ex- change Freezer	Remove Refrig	Remove Freezer	
New Opp	37%	0%	0%	92%	12%	6%	2%	0%	\$24.67
HACAP	90%	0%	0%	76%	18%	13%	0%	0%	\$28.74
Eastern IA	89%	19%	43%	84%	19%	4%	0%	0%	\$34.70
Matura	72%	12%	20%	68%	12%	0%	0%	0%	\$18.54
MICA	54%	5%	14%	55%	19%	4%	0%	0%	\$23.35
Mid-Sioux	95%	30%	14%	86%	14%	7%	0%	0%	\$38.86
North Iowa	99%	46%	79%	90%	27%	9%	0%	1%	\$43.96
NE Iowa	89%	0%	0%	61%	10%	2%	0%	1%	\$17.79
New View	89%	0%	0%	98%	17%	2%	0%	0%	\$41.55
Threshold	96%	18%	13%	62%	27%	9%	0%	1%	\$29.72
Redrock	97%	0%	0%	91%	14%	3%	0%	0%	\$25.01
SCICAP	66%	41%	34%	48%	14%	10%	3%	0%	\$31.12
SE Iowa	87%	0%	0%	53%	8%	3%	0%	0%	\$16.69
SIEDA	87%	3%	23%	56%	8%	2%	0%	0%	\$29.36
Upper Des Moines	100%	0%	0%	85%	21%	3%	0%	0%	\$21.67
West Central	81%	25%	75%	75%	16%	5%	0%	0%	\$36.71
CAA Siouxland	93%	78%	13%	96%	53%	4%	0%	0%	\$67.84
Polk County	91%	22%	74%	79%	22%	3%	0%	0%	\$33.56
State	86%	15%	28%	75%	19%	5%	0%	0%	\$30.81

* First-year household bill savings are averages of total water heater, and lighting for units receiving the measures

TRENDS IN THE INSTALLATION RATES OF LIGHTING, REFRIGERATION, AND HEATING SYSTEM REPLACEMENTS

This section focuses on trends in the installation rates of several efficiency measures phased into the joint utility/WAP program, including compact fluorescent lighting, heating system replacements, and refrigeration measures. These are shown in Figures 1.18a through 1.18d.

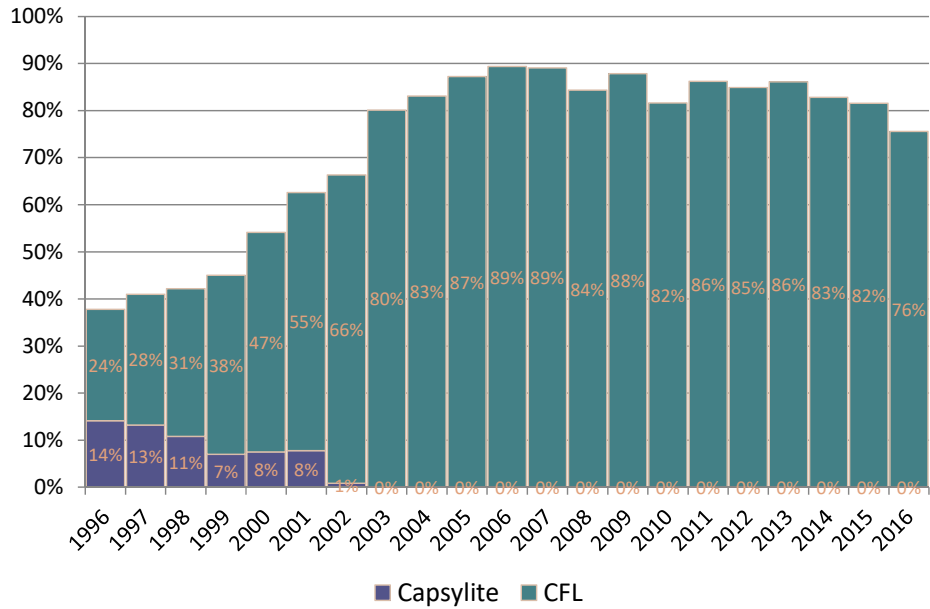


Figure 1.18a Percentage of Housing Units Receiving Lighting Measures

Figure 1.18a shows the percentage of dwellings receiving at least one lighting measure for each year, beginning in 1996. Lighting was installed in 38% of dwellings in 1996 and peaked in 2006 and 2007 at 89%. The installation rates for lighting have decreased over the past four years as more units already have efficient lighting installed. In 2016, 76% of dwellings receive lighting from the program.

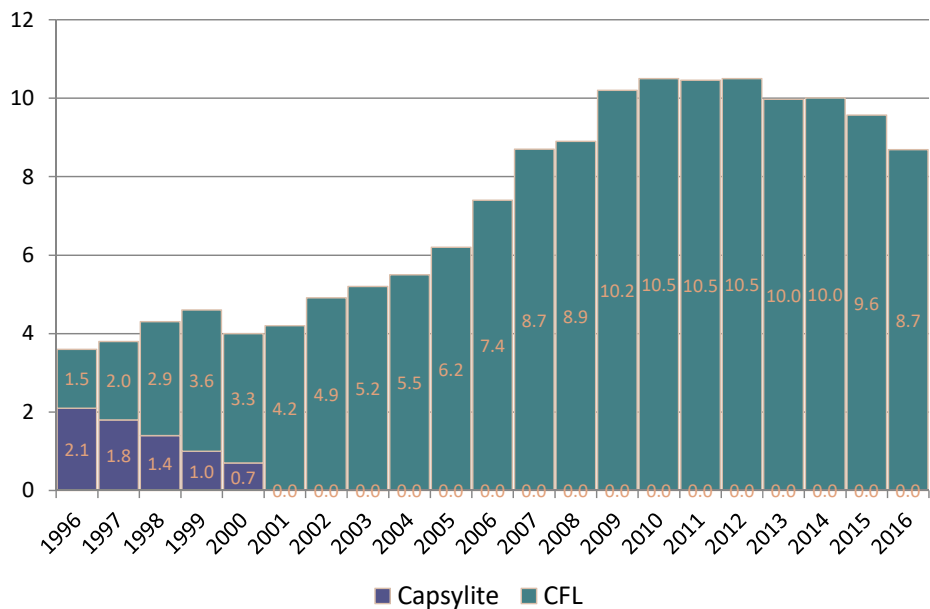


Figure 1.18b Average Number of Bulbs Installed for Housing Units Receiving Lighting Measures

The average number of bulbs installed in dwellings that received at least one lighting measure averaged 8.7 bulbs per house 2015. The peak was in 2010-2013 at 10.5 bulbs per dwelling (Figure 1.18b).

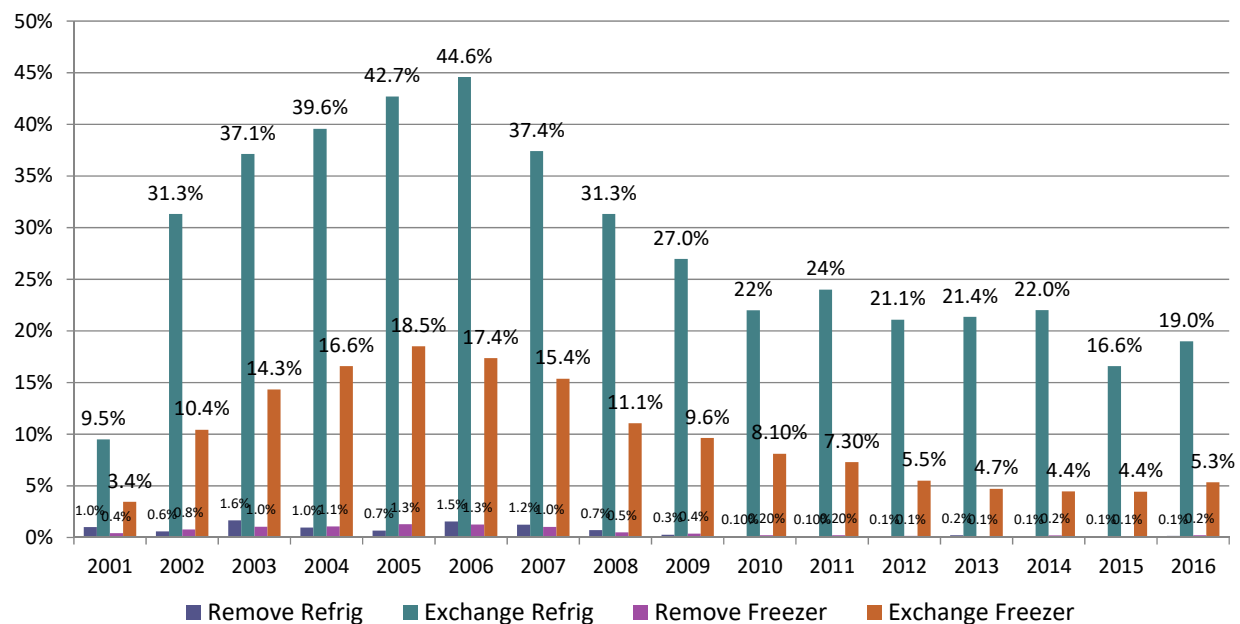


Figure 1.18c Installation Rates of Refrigeration Measures

Figure 1.18c shows the initial ramp up of refrigeration measure installation rates as well as declines in recent years as the efficiency of in-place units is increasing in the client population. The replacement rates of refrigerators remains lower than levels prior to 2015 appliances, but did increase to 19% in 2016. Freezer replacements also increased modestly, to 5.3% in 2016.

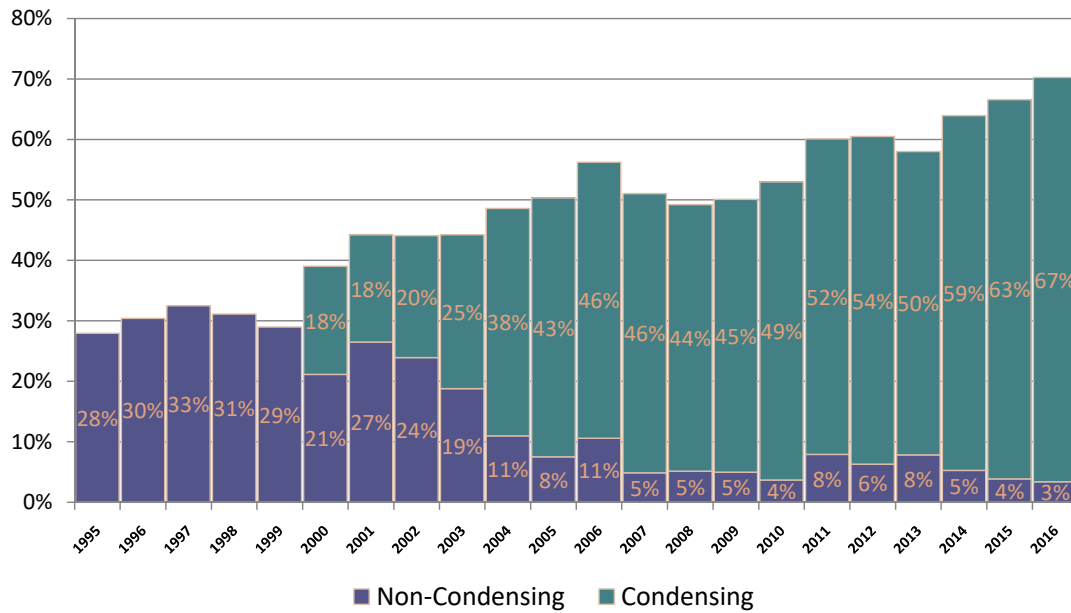


Figure 1.18d Installation Rates of Natural Gas Heating System Replacements

Figure 1.13d shows the transition to condensing (90+ efficiency) furnaces from non-condensing (80% efficiency) heating systems. Overall, 70% of dwellings with natural gas heating received a heating system replacement during 2016, with the vast majority of these being condensing units (67%). This is the highest overall replacement rate and the highest installation rate of condensing units of any year of the program.

AVERAGE COSTS OF MAJOR MEASURES BY AGENCY

Figures 1.19-1.23 show the agency-specific average costs for ceiling, wall, and floor/crawlspace insulation and furnace replacements for the overall program and for utility-funded measures only. These costs represent the total expenditures for these measures averaged over the number of households that received the measure (as opposed to an average across all households that were treated by the agency).

CEILING AND ATTIC INSULATION EXPENDITURES

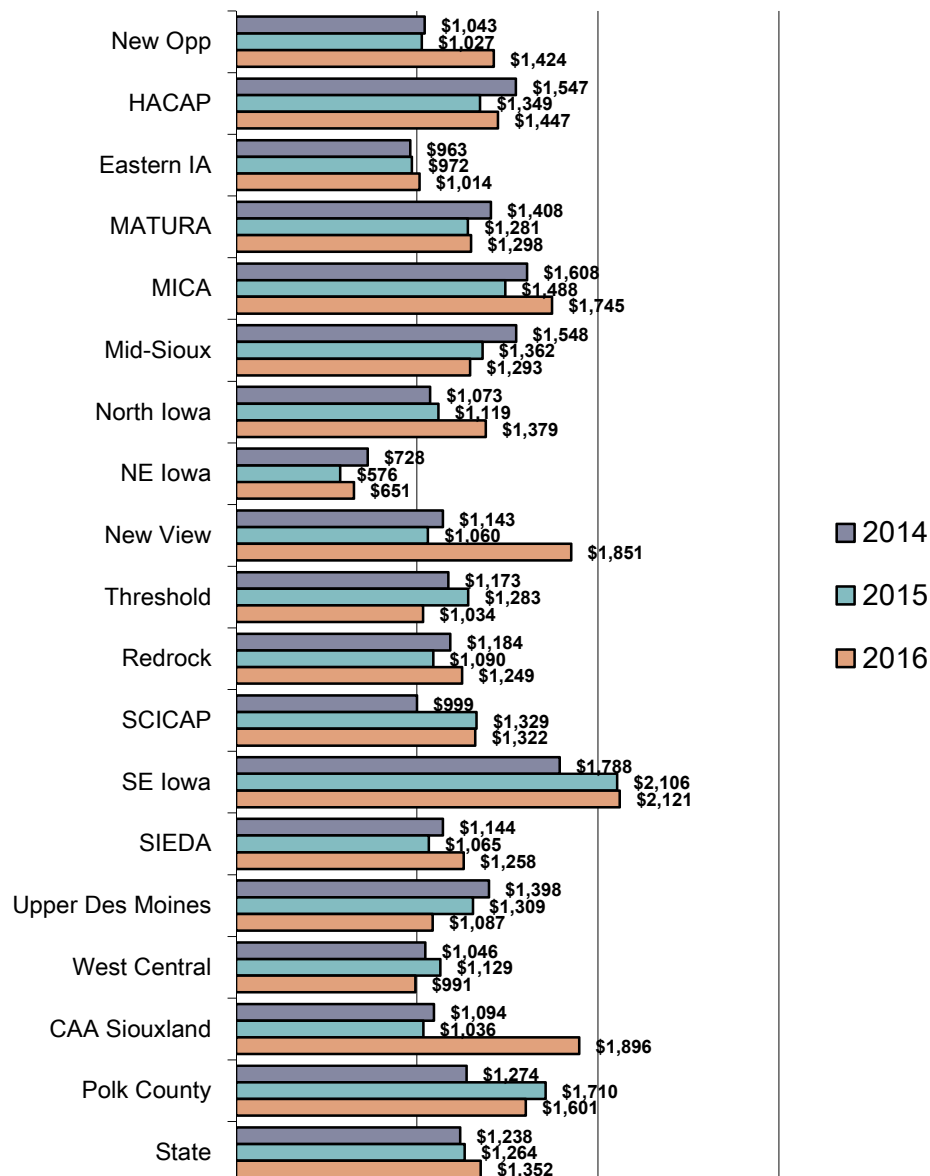


Figure 1.19a Average Program Expenditures on Ceiling Insulation by Agency

Figures 1.19a shows the average installed costs for ceiling and attic insulation (including cavity-fill blown attic insulation) for all expenditures. The statewide average cost for ceiling insulation was \$1,206 in 2016.

SE Iowa averaged \$2,121 per unit. CAA Siouxland (\$1,896) and New View (\$1,851) were the next highest in expenditures. The lowest average spending was reported by Northeast Iowa, averaging \$651.

Figure 1.19b shows the statewide average expenditure of utility funds on ceiling and attic insulation was \$1,206. Southeast Iowa spent the most at \$1,888, followed by Polk County (\$1,546). Northeast Iowa spent the least utility funds (\$591) for ceiling and attic insulation.

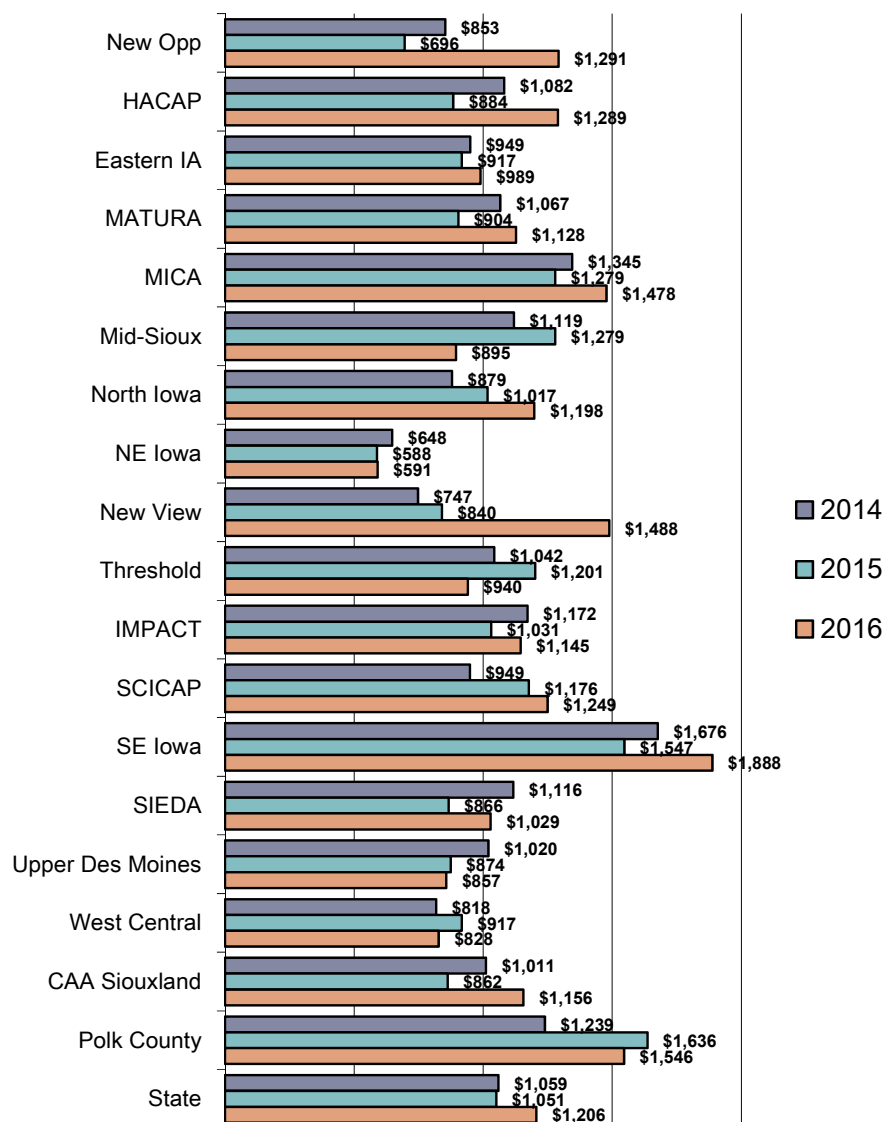


Figure 1.19b Average Utility Expenditures on Ceiling Insulation by Agency

WALL INSULATION EXPENDITURES

Figures 1.20a shows the average installed costs for wall insulation for all funding. The state average expenditure for wall insulation was \$1,904 in CY 2016. HACAP, SE Iowa, and North Iowa each averaged more than \$2,500. Northeast Iowa spent the least, averaging \$568 per dwelling unit.

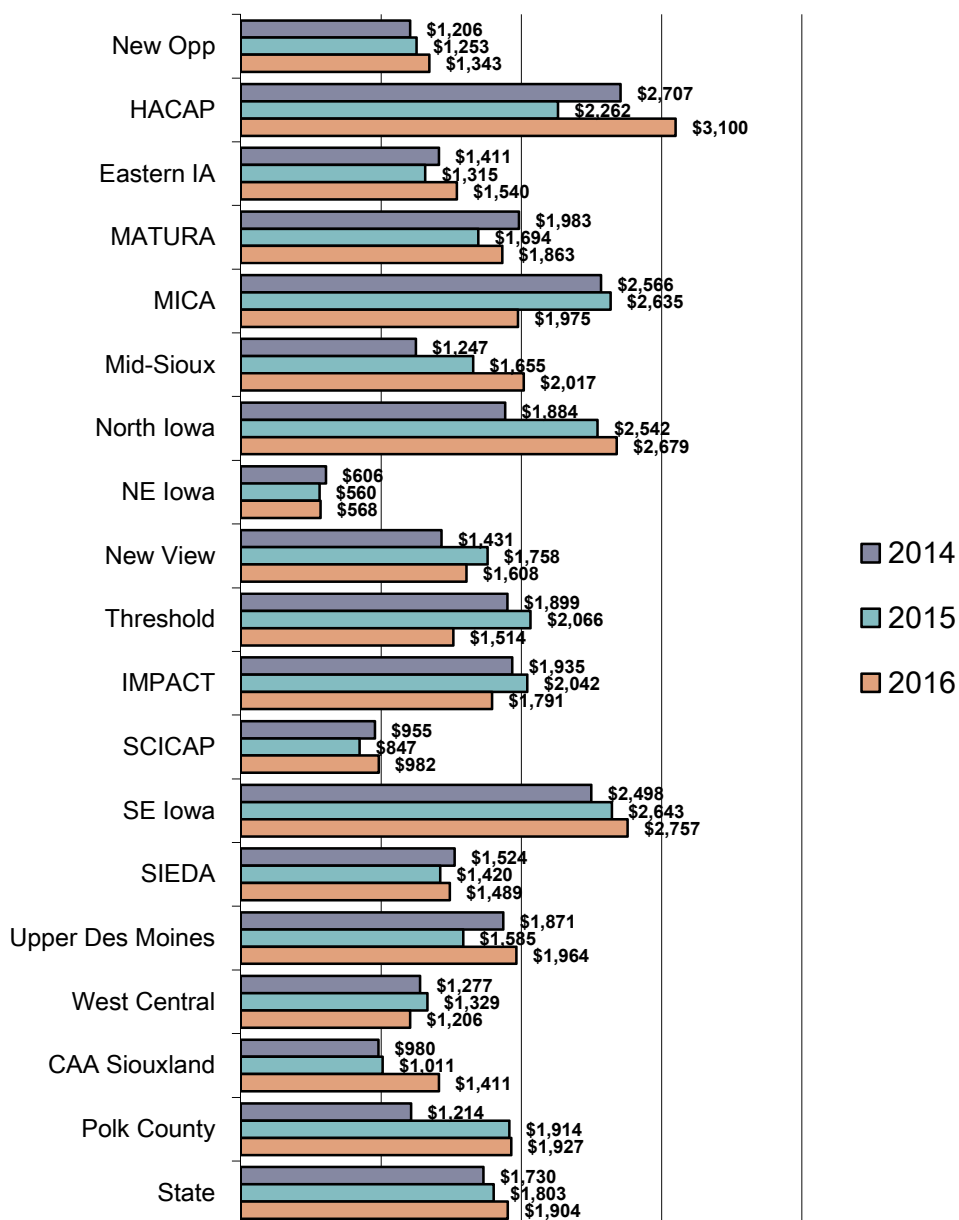


Figure 1.20a Average Program Expenditures on Wall Insulation by Agency

Figure 1.20b provides agency expenditures for utility-funded wall insulation. Statewide, the average expenditures for utility-funded wall insulation averaged \$1,717 in CY 2016. Southeast Iowa, HACAP, and Polk County spent the most utility funds, averaging over \$2,000; Northeast Iowa spent the least, averaging \$631 per dwelling.

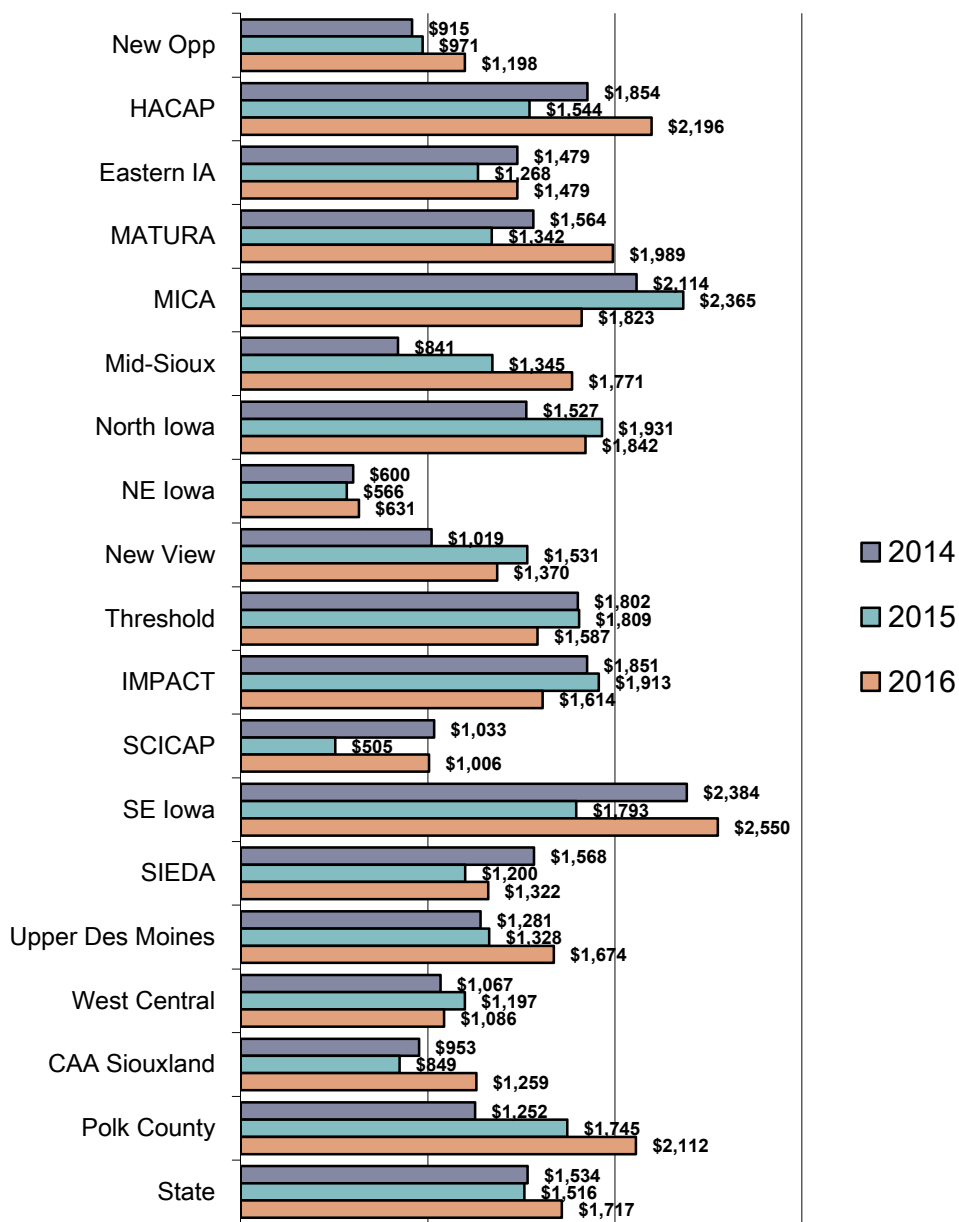


Figure 1.20b Average Utility Expenditures on Wall Insulation by Agency

FLOOR/CRAWLSPACE INSULATION

Figure 1.21a shows the average expenditures for floor/crawlspace insulation from all funding sources. Statewide, the cost for floor/crawlspace insulation averaged \$759. CAA Siouxland, HACAP, New View, and IMPACT spent the most, averaging over \$1,000 per unit, while SIEDA, Threshold, West Central, and North Iowa spent less than \$400.

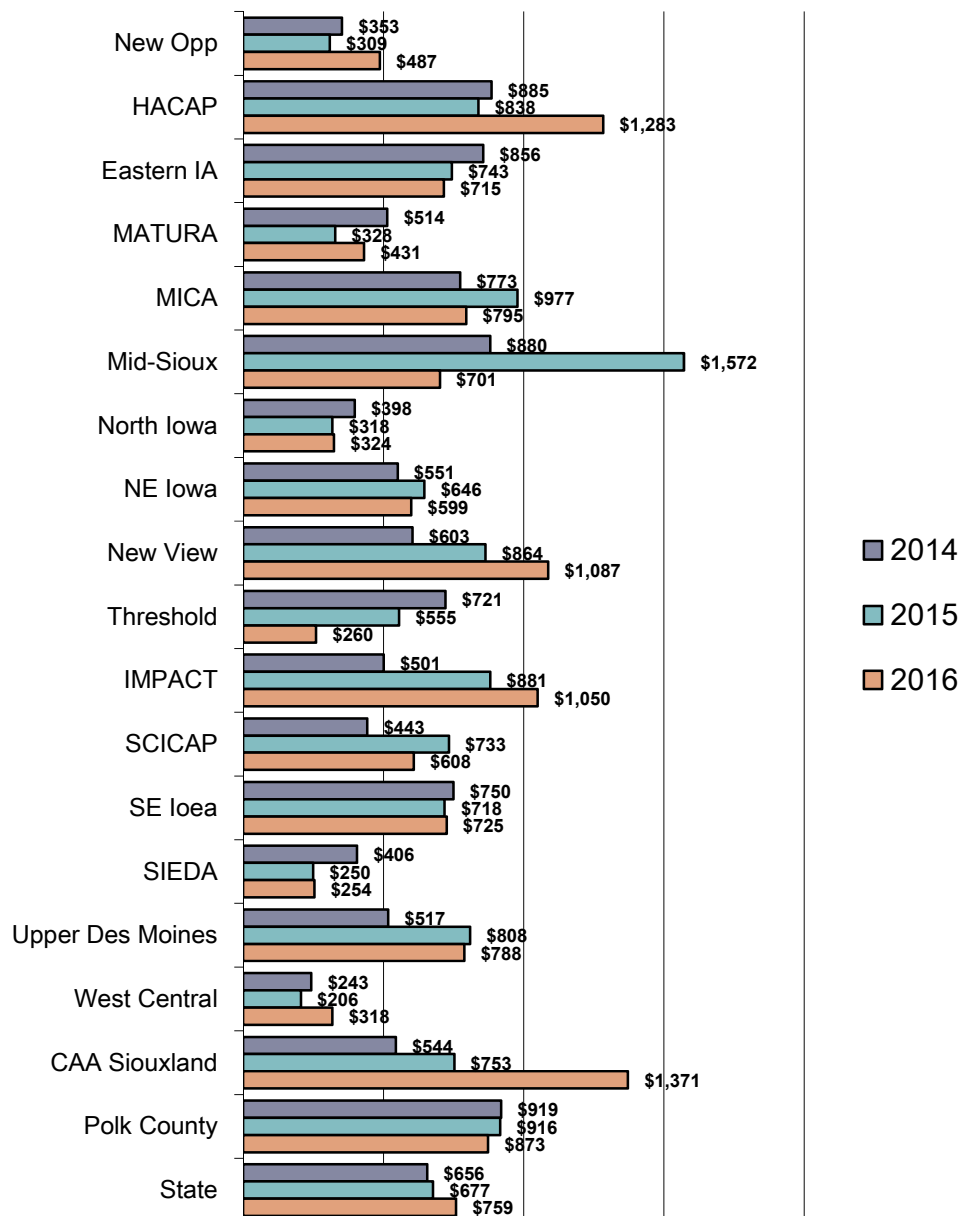


Figure 1.21a Average Program Expenditures on Floor/Crawlspace Insulation by Agency

The average expenditure of utility funds for floor/crawlspace insulation(Figure 1.22b) was \$696. HACAP and IMPACT spent over \$1,000 while SIEDA, Threshold, and West Central spent less than \$300.

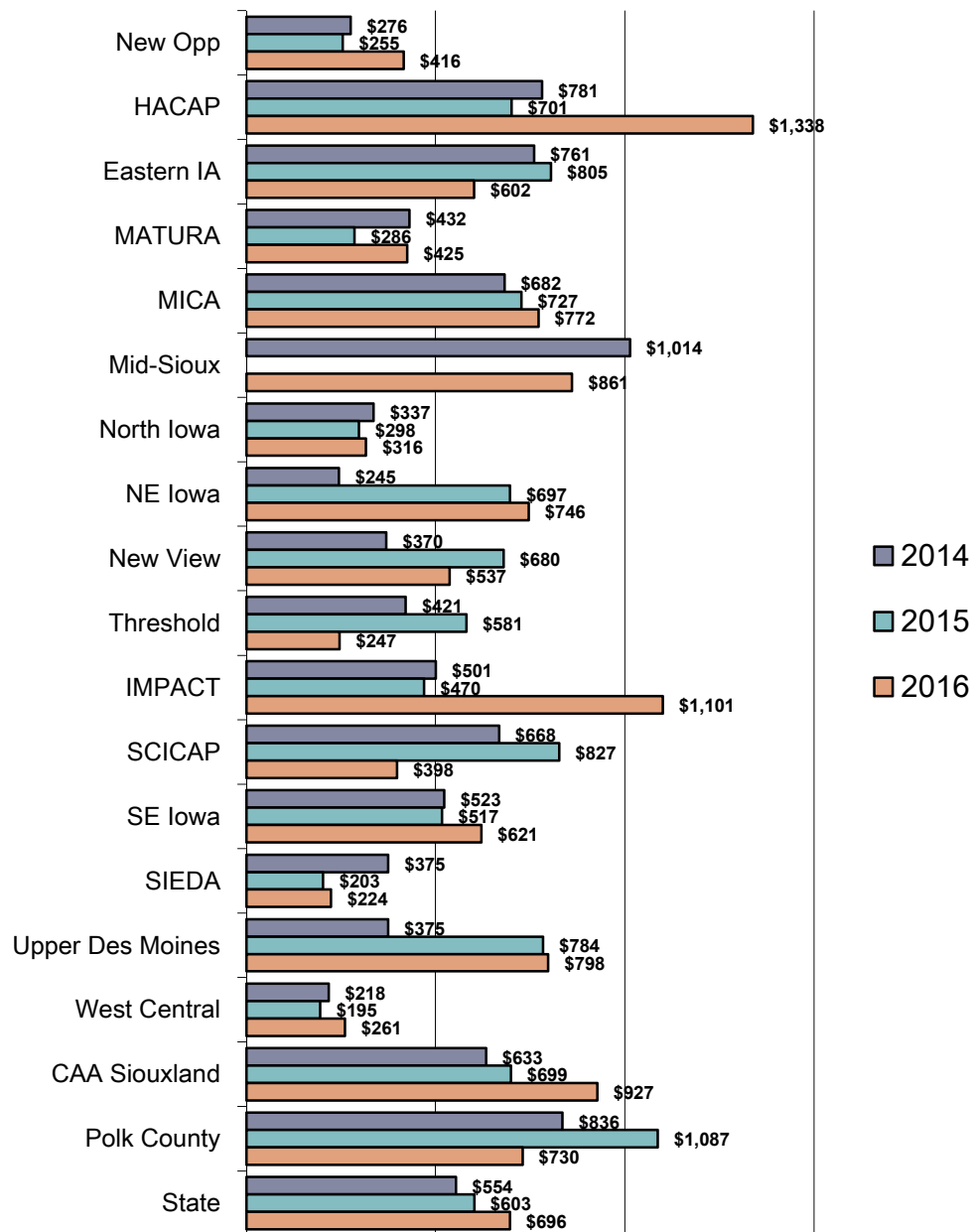


Figure 1.22b Average Utility Expenditures on Floor/Crawlspace Insulation by Agency

NON-ELECTRIC HEATING SYSTEM REPLACEMENT EXPENDITURES

Figure 1.23a shows the average expenditures for all non-electric heating system replacements from all funding sources. Statewide average heating system replacement costs were \$2,981 in 2016. Three agencies reported average expenditures exceeding \$4,000, including New View (\$4,887), SCICAP (\$4,847), and New Opportunities (\$4,020). Three agencies averaged less than \$2,500, including MICA (\$2,057), Threshold (\$2,146), and Polk County (\$2,241).

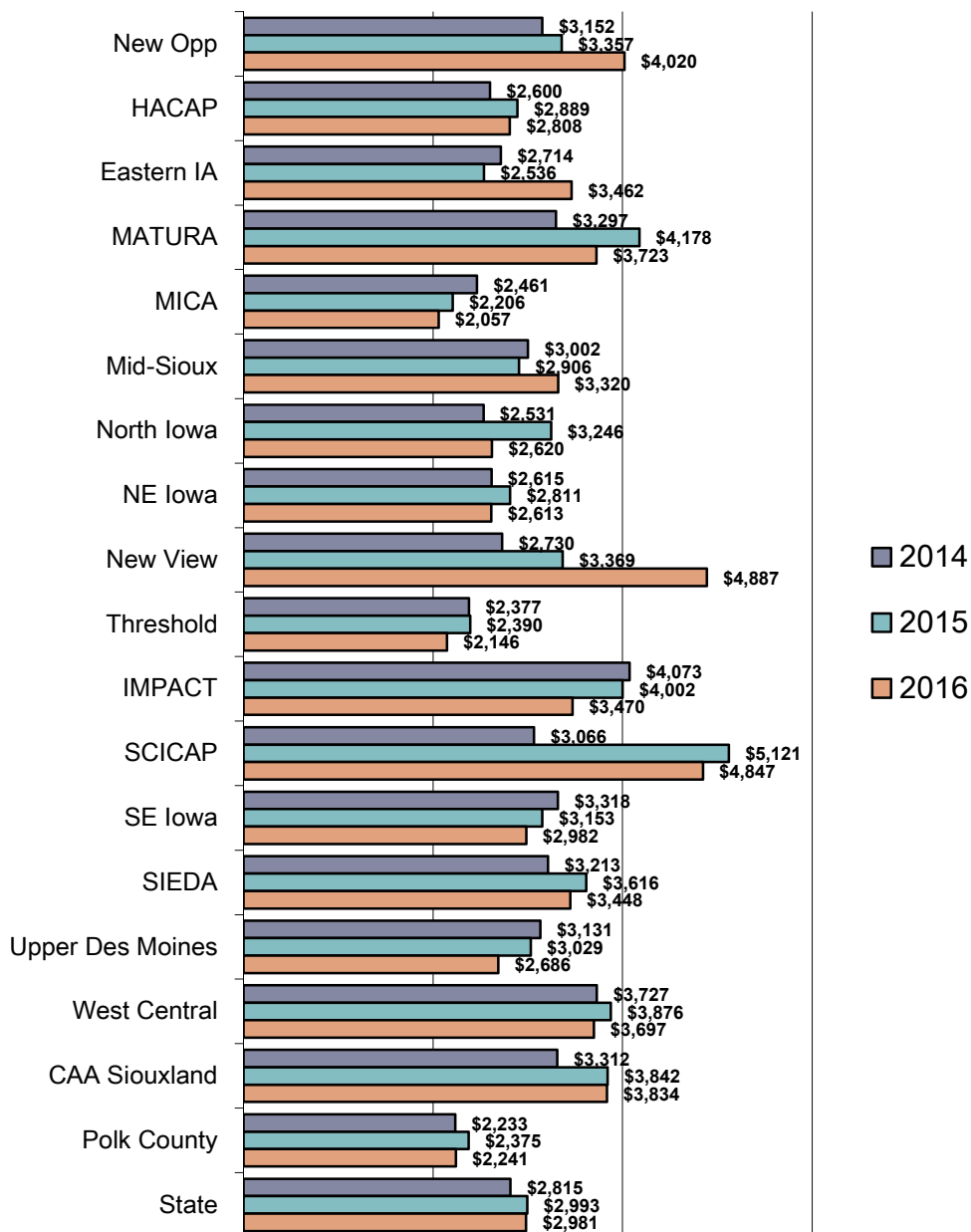


Figure 1.23a Average Program Expenditures on Heating System Replacements by Agency

Figure 1.23b shows the average utility funding for replacement heating systems of \$2,498 statewide. SCICAP averaged the highest expenditure at \$3,125, followed by MATURA (\$3,032) and CAA Siouxland (\$2,995) and Eastern Iowa (\$2,948). MICA spent the least, averaging \$1,924 per housing unit.

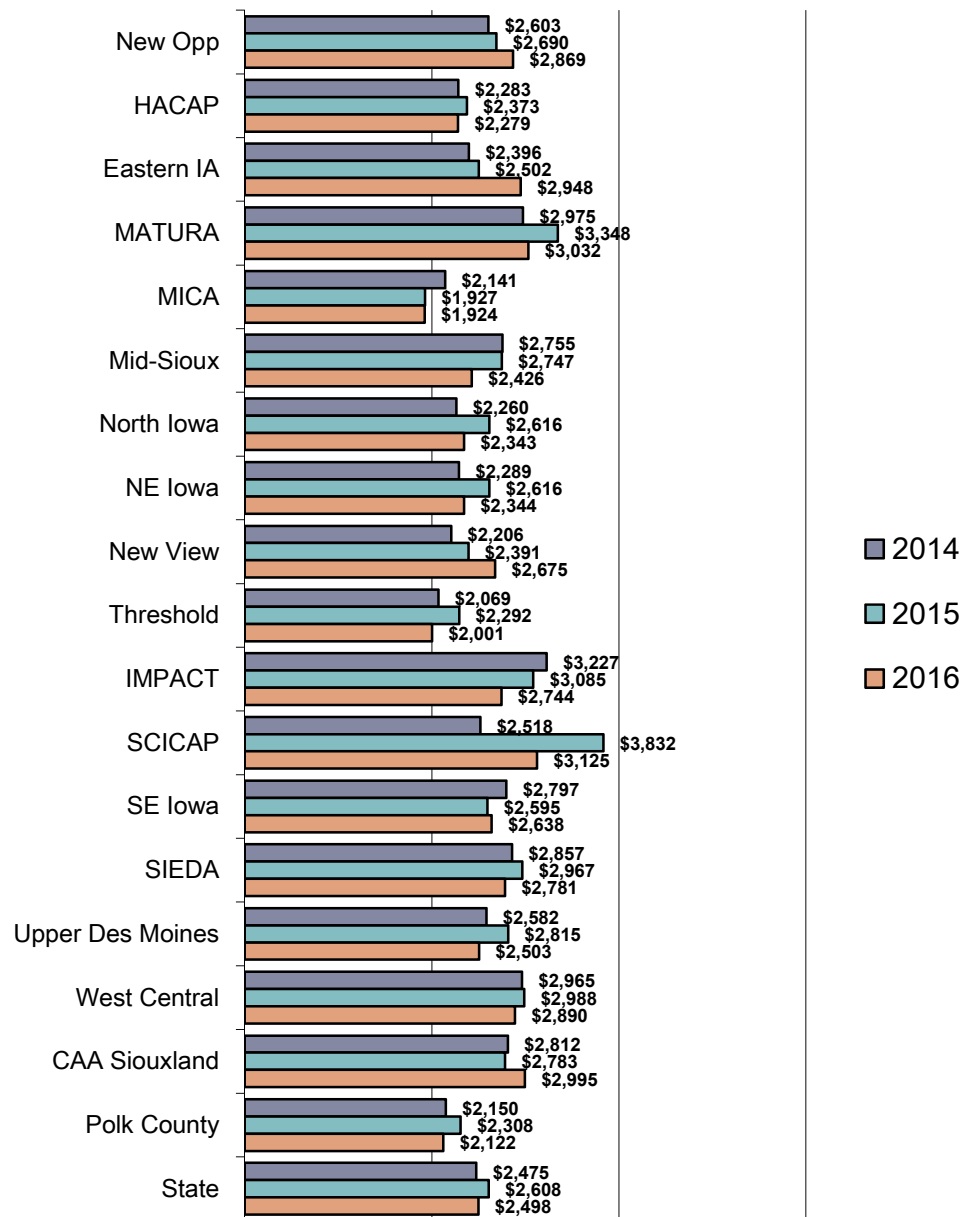


Figure 1.23b Average Utility Expenditures on Heating System Replacements by Agency

Section 4, Detailed Spending and Impact Profiles by Agency provides tables similar to those in Section 4 for each weatherization agency, for all measures installed.

Section 5, Detailed Spending and Impact Profiles by Agency for Utility Expenditures provides similar detail by agency, but is limited to measures funded by the utilities.

2. FUEL CONSUMPTION ANALYSIS

Savings were estimated for all clients based upon measures installed in each dwelling, using algorithms developed in prior studies of the Iowa low-income program. The fuel consumption analysis provides adjustment factors to the estimated impacts, with gas adjustments applied to estimates of natural gas, propane, and fuel oil heating impacts.

STUDY SAMPLE AND METHODOLOGY

Weatherization jobs completed from January 1, 2016 through December 31, 2016 comprised our treatment group gas treatment group. Jobs weatherized from October 1, 2015 through May 1, 2016 comprised the electricity treatment group.

We used a comparison group to adjust for non-weatherization program factors that affect fuel usage, including but not limited to fuel price shocks, naturally-occurring conservation, and participation in other energy programs. Our comparison group consisted of all LIHEAP clients of the SLICE utilities and who applied for energy assistance from October, 2015 through March, 2017. In order to assess a change in consumption for the comparison group, we established a pseudo-treatment period for each comparison group household by assigning the same period as that of a randomly selected household from the treatment group.

Estimated usage readings were combined with subsequent actual readings. Phone/postcard readings and final or corrected readings were considered actual readings. Reading codes not corresponding to actual readings were considered estimated.

The weatherization period was defined as beginning with the audit date and ending with the date the dwelling was reported as complete. We truncated the usage data to a period of no more than to 390 days prior to the beginning of the weatherization period, and up to 390 days following end of the weatherization period.

Fuel consumption was weather-normalized using weather data from the same ten weather zones (Figure 2.1). Our long-term normal weather datasets are comprised of the 20-year period ending in Dec, 2009.

The comparison group records were matched with treatment group records based upon normalized annual pre-weatherization consumption, housing type, heating fuel, and model components (heating and or/ cooling and/or baseload).

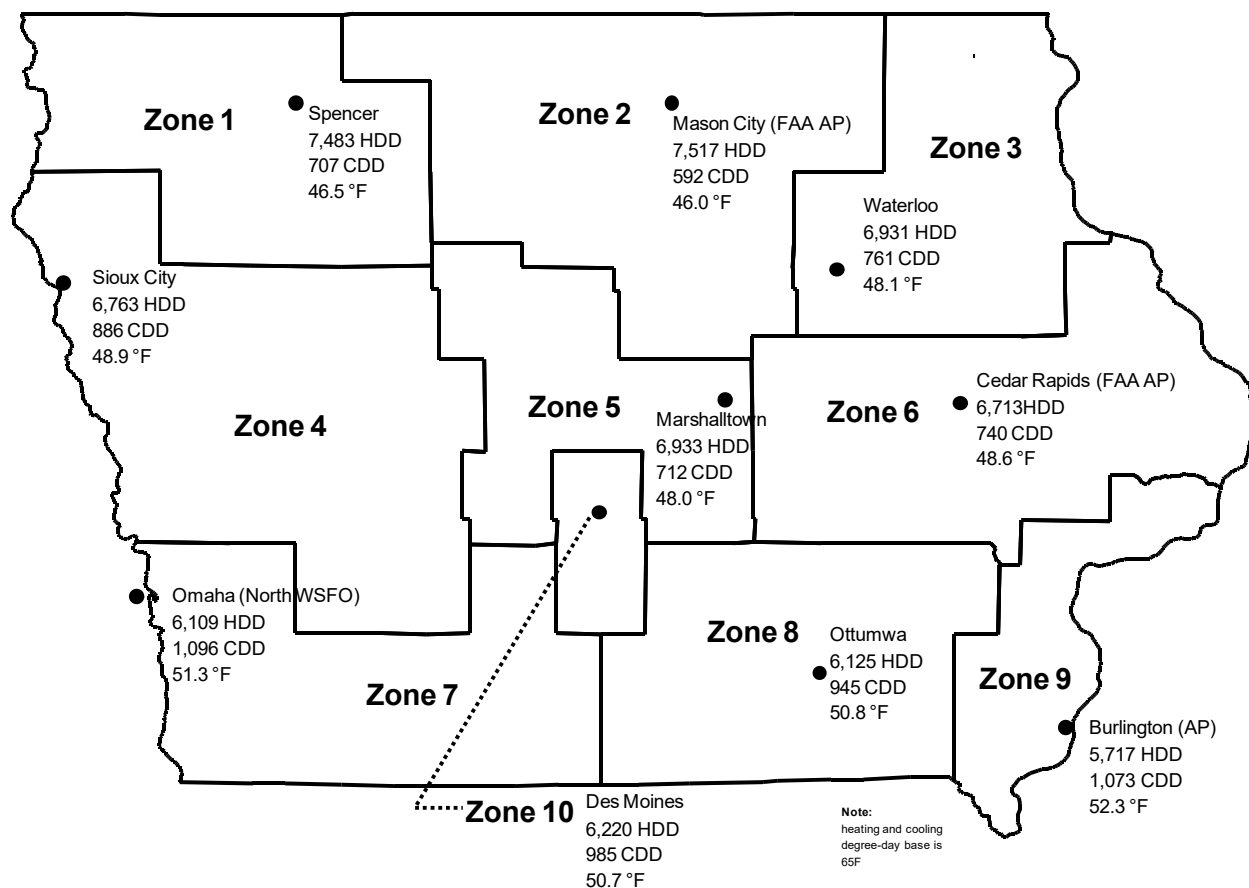


Figure 2.1. Weather zones used in the weather-normalization

MODEL SELECTION

We investigated impacts using five model specifications for each dwelling:

- Heating/Baseload (gas and electricity)
 - HB using floating point reference temperatures ranging between 40°F to 70°F
 - HBF using fixed reference temperatures of 62°F for natural gas and 58°F for electricity
- Cooling/Baseload (electricity only)
 - CB using floating point reference temperatures ranging between 60°F to 80°F
 - CBF using fixed reference temperatures of 68°F
- Heating only (gas only)
 - HO using floating point reference temperatures ranging between 40°F and 70°F
 - HOF using fixed reference temperatures of 62°F

- Heating/Cooling/Baseload (electricity only)
 - Heating floating point reference temperatures ranging between 40°F and 70°F
 - Cooling floating point reference temperatures ranging between 60°F and 80°F
 - HCF using fixed reference temperatures of 58°F for heating and 68°F for cooling
- BO Baseload (electricity and gas, but no gas models passed the selection process)
 - flat usage, requiring nine months of data.

Three levels of screens were used, including:

- 1) Insufficient usage history or usage characteristics
- 2) Poor model diagnostics
- 3) Poor model reliability.

SCREENS FOR POOR MODEL DIAGNOSTICS

Models were dropped if:

- the coefficient of variation of NAC exceeded 0.1
- negative values for adjusted r^2
- Gas: R^2 of at least 0.7, electricity: R^2 of at least 0.5

SCREENS FOR POOR MODEL RELIABILITY

Models were dropped if:

- the normalized annual heating consumption, heating slope, or baseload components were negative
- Minimal requirements for specific model types:
 - Heating models require usage during periods representing at least 50% of the annual heating days
 - Baseload models required 8.5 months of consumption
- Usage histories had insufficient data during heating and/or cooling seasons. Histories must have usage during periods of at least 50% of heating degree days (base 62 for gas, 58 for electricity heating models), and 50% of cooling degree days base 68 (electricity only)

Finally, we required that the normalized annual consumption was within 10% of the results for alternate model specifications where multiple models met other criteria.

ATTRITION ANALYSIS – GAS

We requested data for 1,215 weatherization client dwellings with gas heating and 70,196 LIHEAP client dwellings for our comparison group (also with gas heating). This request included dwellings weatherized during 2016 and dwellings weatherized during 2016.

ATTRITION RATES

Table 2.1 provides a breakout of the attrition rates of the natural gas billing data request, by state and utility.

The utilities returned useable data for 86% of the treatment client dwellings and 77% for the comparison group (LIHEAP) clients. Useable histories with sufficient pre- and post-weatherization data were available for 74% of the treatment group clients and 62% of the comparison group. Our final analytic dataset included 811 weatherization client dwellings and 37,734 comparison dwellings, representing 67% and 54% of the requested usage histories for the treatment and comparison groups, respectively.

Table 2.1 Gas Analysis Sample Attrition

		State		IPL		BHC		MAE	
		Trt	Cmpr	Trt	Cmpr	Trt	Cmpr	Trt	Cmpr
Return Rate	Requested	1,215	70,196	429	18,584	174	10,730	612	40,882
	Returned	1,049	54,190	379	15,944	160	9,915	510	28,331
	Percentage Returned	86.3%	77.2%	88.3%	85.8%	92.0%	92.4%	83.3%	69.3%
Useable Histories	Both Pre and Pst Cnt	898	43,699	302	10,672	140	8,258	456	24,769
	Both Pre and Pst Pct	73.9%	62.3%	70.4%	57.4%	80.5%	77.0%	74.5%	60.6%
Passed Model	Both Pre and Pst Cnt	829	39,004	270	9,366	123	7,116	436	22,522
Diagnostics	Both Pre and Pst Pct	68.2%	55.6%	62.9%	50.4%	70.7%	66.3%	71.2%	55.1%
Passed Reliability	Both Pre and Pst Cnt	811	37,734	261	9,101	122	6,913	428	21,720
Screens	Both Pre and Pst Pct	66.7%	53.8%	60.8%	49.0%	70.1%	64.4%	69.9%	53.1%

Table 2.2 provides the attrition analysis broken out by housing type. Overall, 67% of the requested account data for single family site-built dwellings, 69% of mobile homes, and 51% of the few multi-family dwellings weatherized by the program passed all analytic screens.

Table 2.2 Gas Attrition by Housing Type

		State		IPL		BHC		MAE	
		Trt	Cmpr	Trt	Cmpr	Trt	Cmpr	Trt	Cmpr
Single Family Detached Framed Dwellings									
Requested		1,068	55,380	380	15,218	155	8,829	533	31,333
Returned		933	44,579	344	13,407	145	8,189	444	22,983
Percentage Returned		87.4%	80.5%	90.5%	88.1%	93.5%	92.8%	83.3%	73.4%
Passed Model	Both Pre and Pst Cnt	734	33,000	243	8,139	112	6,032	379	18,829
Diagnostics	Both Pre and Pst Pct	68.7%	59.6%	63.9%	53.5%	72.3%	68.3%	71.1%	60.1%
Passed Reliability	Both Pre and Pst Cnt	718	31,955	234	7,914	111	5,855	373	18,186
Screens	Both Pre and Pst Pct	67.2%	57.7%	61.6%	52.0%	71.6%	66.3%	70.0%	58.0%
Mobile Homes									
Requested		98	3,596	26	1,113	5	494	67	1,989
Returned		86	2,858	24	970	4	445	58	1,443
Percentage Returned		87.8%	79.5%	92.3%	87.2%	80.0%	90.1%	86.6%	72.5%
Passed Model	Both Pre and Pst Cnt	70	1,989	18	546	3	297	49	1,146
Diagnostics	Both Pre and Pst Pct	71.4%	55.3%	69.2%	49.1%	60.0%	60.1%	73.1%	57.6%
Passed Reliability	Both Pre and Pst Cnt	68	1,935	18	531	3	292	47	1,112
Screens	Both Pre and Pst Pct	69.4%	53.8%	69.2%	47.7%	60.0%	59.1%	70.1%	55.9%
Multi-Family									
Requested		49	11,220	23	2,253	14	1,407	12	7,560
Returned		30	6,753	11	1,567	11	1,281	8	3,905
Percentage Returned		61.2%	60.2%	47.8%	69.6%	78.6%	91.0%	66.7%	51.7%
Passed Model	Both Pre and Pst Cnt	25	4,015	9	681	8	787	8	2,547
Diagnostics	Both Pre and Pst Pct	51.0%	35.8%	39.1%	30.2%	57.1%	55.9%	66.7%	33.7%
Passed Reliability	Both Pre and Pst Cnt	25	3,844	9	656	8	766	8	2,422
Screens	Both Pre and Pst Pct	51.0%	34.3%	39.1%	29.1%	57.1%	54.4%	66.7%	32.0%

OUTLIERS

An outlier screen was then applied to models with reliable pre- and post-usage data using the Interquartile Rule for Outliers (Tukey Fence). Cases where the percentage savings were greater or less than 1.5 times the interquartile range were dropped.

The outlier screen dropped approximately 2% of treatment group observations and 13% of comparison group cases with pre and post savings models.

GAS IMPACT ANALYSIS

Our results are summarized in Table 2.3. The agency-specific results are summarized on each line, with the overall program impacts summarized on the bottom line. The column labeled ‘Population’ provides the count of all dwellings with natural gas heating that were treated by the weatherization program during the calendar year. The treatment group columns indicate the number of dwellings in our screened analysis dataset (‘n’), the weather-normalized annual consumption prior to weatherization (‘Baseline’ consumption), the 90% confidence interval on the baseline consumption (interpreted as the variation from baseline for which we are 90% certain that the true mean value of the baseline consumption falls within), the unadjusted savings (‘Savings’) and the 90% confidence interval on the savings.

The next section of Table 3.2 provides results for the matched comparison group. To the right of those results are the net savings by agency, including average savings and percentage savings.

The rightmost section summarizes the average estimated savings which were developed using dwelling-specific measure data as well as a comparison between the estimated and observed savings, termed the realization rate. The realization rate is defined as the ratio of observed savings to estimated savings. Our final agency-specific results are developed by applying this ratio to the estimated savings for all dwellings with non-electric heating.

The overall adjusted savings (reported under the Net Savings column) averaged 251 therms for single family site-built dwellings. The 90% confidence interval was 15 therms, which is suggestive that 90% certain that the true population mean savings falls in the approximate range of 236 and 266 therms. The overall mean percent savings was 25.1%, with a 1.3% confidence interval.

Net gas savings for mobile homes averaged 162 therms ± 31 therms. The overall percentage savings for mobile homes was 20.1%, with a 3.6% confidence interval. The average savings of 162 therms for mobile homes are significantly lower than the 251 therms observed for single family site-built dwellings.

We did not have enough data to provide reliable results for the few multi-family dwellings weatherized.

Table 2.3 Gas Fuel Consumption Analysis Results

	Population (with gas heating source)	Treatment Group					Comparison Group					Net				Estimated		
		n	Baseline Cons. (therms)	90% CI	Savings (therms)	90% CI	n	Baseline Cons. (therms)	90% CI	Savings (therms)	90% CI	Net Savings (therms)	90% CI	Percent Savings (%)	90% CI	Estimated Savings	90% CI	Realization Rate (%)
Single Family Detached Framed Dwelling Results																		
New Opportunities	37	17	1,223	115	232	103	135	1,211	107	0	48	233	111	19.0%	10.4%	284	53	81.9%
HACAP	95	56	1,053	81	291	60	533	1,054	78	-7	21	298	58	28.3%	4.9%	293	26	101.6%
Eastern IA	129	104	971	54	274	35	598	969	54	-1	17	275	38	28.3%	3.2%	255	22	108.0%
MATURA	21	10	1,125	241	336	112	70	1,111	221	31	57	304	78	27.0%	6.7%	200	58	151.8%
MICA	66	43	1,069	92	260	49	327	1,069	91	-20	27	279	63	26.1%	4.6%	282	28	98.8%
Mid-Sioux	28	9	933	97	188	53	134	937	84	-10	34	198	63	21.2%	7.4%	255	62	77.6%
North Iowa	75	46	1,048	77	242	54	370	1,043	76	24	20	218	51	20.8%	4.6%	363	31	60.1%
NE Iowa	70	44	878	86	86	51	325	872	82	-31	20	117	55	13.3%	5.3%	192	30	61.0%
New View	20	11	997	138	132	103	235	996	137	28	39	104	115	10.4%	11.8%	273	66	38.0%
Threshold	81	50	938	56	213	55	434	940	55	10	20	203	52	21.6%	4.7%	286	24	70.9%
IMPACT	27	17	1,187	134	358	65	197	1,179	129	-27	37	384	72	32.4%	5.4%	299	32	128.5%
SCICAP	22	9	787	140	184	89	89	764	123	-49	18	235	86	29.8%	9.1%	268	159	87.6%
SE Iowa	51	19	1,248	64	398	89	131	1,238	65	5	41	393	100	31.5%	6.8%	398	38	98.8%
SIEDA	48	27	790	107	220	56	437	779	102	-40	19	260	62	32.9%	6.0%	208	43	125.0%
Upper Des Moines	99	76	839	57	175	44	466	840	56	-16	12	191	45	22.8%	4.1%	264	24	72.4%
West Central	43	31	809	101	182	87	405	806	97	-13	13	195	81	24.1%	8.3%	250	36	77.9%
CAA Siouxland	34	23	1,188	129	327	90	306	1,192	127	18	36	309	99	26.0%	6.5%	279	37	110.6%
Polk County	163	108	1,104	58	308	34	618	1,100	58	11	18	298	35	27.0%	2.8%	339	19	87.7%
Overall	1,109	700	998	21	247	14	5,810	995	21	-4	6	251	15	25.1%	13%	283	8	88.5%
Mobile Home Results (entire state)																		
Overall	100	63	808	47	144	29	437	806	46	-19	11	162	31	20.1%	3.6%	190	25	85.6%

SAVINGS WITH RESPECT TO PRE-WEATHERIZATION USAGE

We plotted the relationship between the normalized annual consumption and the net savings for single family site-built dwellings (Figure 2.2). The upward trending regression line indicates the population-weighted fit between NAC and savings, and demonstrates savings in relation to baseline consumption. The statewide average is shown at the center.

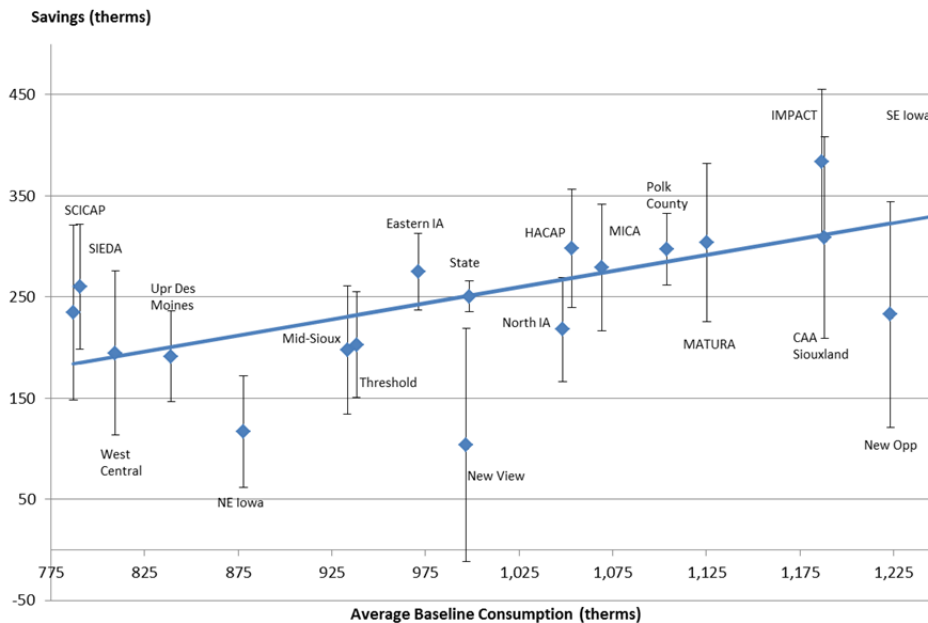


Figure 2.2 Savings in relation to the pre-weatherization normalized annual consumption (single family site-built dwellings).

The 90% confidence intervals of the average adjusted savings for each agency are shown in the error bars. Agencies with confidence intervals overlapping the regression line produced savings consistent with the state overall for dwellings relative to the baseline consumption for those agencies. We found that the confidence intervals on the savings for all but two agencies overlapped the regression line, indicating relatively good or high performance for those fifteen agencies. The two agencies which did not achieve good savings relative to pre-weatherization consumption were NE Iowa and New View. This suggests that significant differently different housing stock, weatherization procedures, or other factors resulted in comparatively lower savings for these agencies relative to pre-weatherization consumption.

In addition, agencies in which the confidence intervals range extend into or above the confidence interval for the state overall had similar or higher savings relative to the state. All agencies achieved this except NE Iowa and New View.

Figure 2.3 provides another view of the savings with respect to baseline consumption. The plot shows a point for the savings for dwellings in our billing dataset, a regression line through all points, and an assessment of the percentage savings as determined by this regression line (shown by the curved line). The chart provides confirmation that absolute savings increase as higher-consumption dwellings are targeted. Percent savings increases significantly as baseline consumption increases at the lower range, and less so at higher ranges as the curve flattens out.

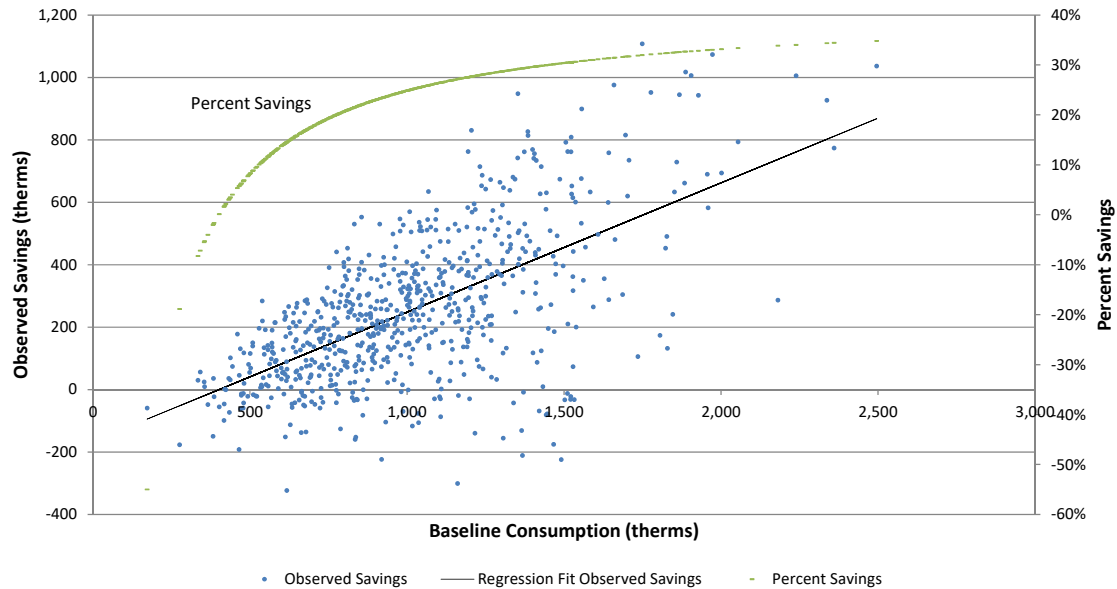


Figure 2.3. Relationship between baseline consumption, savings, and percentage savings

TRENDS IN BASELINE CONSUMPTION AND ENERGY SAVINGS

Figure 2.4 provides a yearly summary of baseline consumption, savings, and percentage savings for billing analyses conducted since the calendar year 1998 program. The treatment group normalized annual consumption approached 1,394 therms per site-built dwelling in the CY 1998 program. Baseline consumption has declined by 28% since then, to 998 in CY 2016. Generally speaking, net savings has declined through 2010 and has been increasing slightly since then. Overall percentage savings has increased through the period, from around 23% to slightly more than 25% in the 2016 program.

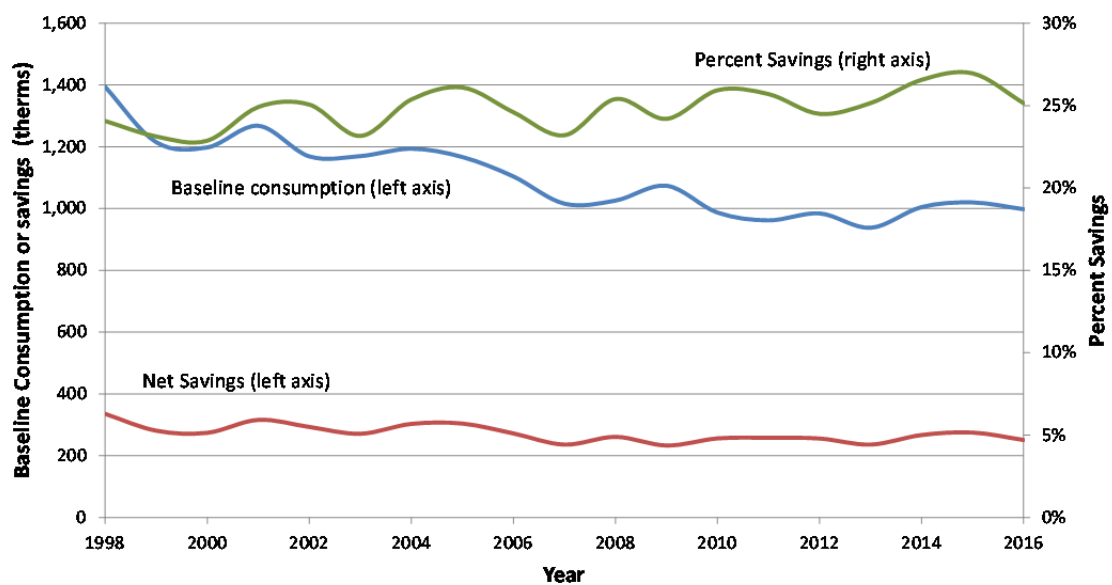


Figure 2.4 Annual Baseline Consumption, Savings, and Percentage Savings

ATTRITION ANALYSIS – ELECTRICITY

We requested data for 950 weatherization client dwellings and 88,172 LIHEAP client dwellings for our comparison group. The electricity analysis was restricted to home weatherized between Oct 1, 2015 and May 1, 2016 to allow for up to a year of pre and post-weatherization periods.

Overall we had 475 treatment and 39,103 comparison group homes which passed all screens.

Table 2.5 Electricity Analysis Sample Attrition

		State		IPL		MAE	
		Trt	Cmpr	Trt	Cmpr	Trt	Cmpr
Return Rate	Requested	950	88,172	447	42,101	503	46,041
	Returned	816	78,029	389	38,482	427	39,532
	Percentage Returned	85.9%	88.5%	87.0%	91.4%	84.9%	85.9%
Useable Histories	Both Pre and Pst Cnt	624	53,113	277	22,961	347	30,144
	Both Pre and Pst Pct	65.7%	60.2%	62.0%	54.5%	69.0%	65.5%
Passed Model	Both Pre and Pst Cnt	560	45,451	246	20,402	314	25,045
	Both Pre and Pst Pct	58.9%	51.5%	55.0%	48.5%	62.4%	54.4%
Passed Reliability	Both Pre and Pst Cnt	475	39,103	225	18,653	250	20,449
	Both Pre and Pst Pct	50.0%	44.3%	50.3%	44.3%	49.7%	44.4%

Table 2.6 provides the attrition analysis broken out by housing type. Most of the cases with electricity results were for weatherized single family detached frame dwellings, totaling 439 cases. Twenty-six mobile homes and ten multi-family units weatherized by the program passed all screens.

Table 2.6 Electricity Attrition by Housing Type

		State		IPL		MAE	
		Trt	Cmpr	Trt	Cmpr	Trt	Cmpr
Single Family Detached Framed Dwellings							
Requested		838	61,399	385	29,865	453	31,513
Returned		736	55,114	349	27,483	387	27,620
Percentage Returned		87.8%	89.8%	90.6%	92.0%	85.4%	87.6%
Passed Model	Both Pre and Pst Cnt	514	33,965	223	15,597	291	18,365
Diagnostics	Both Pre and Pst Pct	61.3%	55.3%	57.9%	52.2%	64.2%	58.3%
Passed Reliability	Both Pre and Pst Cnt	439	29,516	203	14,313	236	15,202
Screens	Both Pre and Pst Pct	52.4%	48.1%	52.7%	47.9%	52.1%	48.2%
Mobile Homes							
Requested		73	3,391	35	1,593	38	1,796
Returned		61	3,015	29	1,462	32	1,552
Percentage Returned		83.6%	88.9%	82.9%	91.8%	84.2%	86.4%
Passed Model	Both Pre and Pst Cnt	34	1,758	16	766	18	992
Diagnostics	Both Pre and Pst Pct	46.6%	51.8%	45.7%	48.1%	47.4%	55.2%
Passed Reliability	Both Pre and Pst Cnt	26	1,473	15	686	11	787
Screens	Both Pre and Pst Pct	35.6%	43.4%	42.9%	43.1%	28.9%	43.8%
Multi-Family							
Requested		39	23,382	27	10,643	12	12,732
Returned		19	19,900	11	9,537	8	10,360
Percentage Returned		48.7%	85.1%	40.7%	89.6%	66.7%	81.4%
Passed Model	Both Pre and Pst Cnt	12	9,728	7	4,039	5	5,688
Diagnostics	Both Pre and Pst Pct	30.8%	41.6%	25.9%	37.9%	41.7%	44.7%
Passed Reliability	Both Pre and Pst Cnt	10	8,114	7	3,654	3	4,460
Screens	Both Pre and Pst Pct	25.6%	34.7%	25.9%	34.3%	25.0%	35.0%

OUTLIERS

An outlier screen was then applied to models with reliable pre and post usage data using the Interquartile Rule for Outliers (Tukey Fence). Cases where the percentage savings were greater or less than 1.5 times the interquartile range were dropped.

The outlier screen dropped approximately 11% of treatment group observations and 12% of comparison group cases with pre and post savings models.

ELECTRICITY IMPACT ANALYSIS

We developed state-level electricity savings results for two groups, those with non-electric space heat and for those with electric space heat. Our results are summarized in Table 2.7.

Table 2.7 Electricity Fuel Consumption Analysis Results (State Level Results)

	Population	Treatment Group					Comparison Group					Net Savings				Percent Savings			Estimated Savings		
	n	n	Baseline Cons. (kWh)	90% CI	Savings (kWh)	90% CI	n	Baseline Cons. (kWh)	90% CI	Savings (kWh)	90% CI	(kWh)	90% CI	(%)	90% CI	(kWh)	90% CI	Realization Rate (%)	(kWh)	90% CI	Realization Rate (%)
Electric Savings for Dwellings with Non-Electric Space Heat																					
Overall	1,067	406	10,396	456	925	211	3,513	10,104	458	217	122	718	234	6.2%	19%	655	30	109.6%			
Electric Savings for Dwellings with Electric Space Heat																					
Overall	57	30	23,597	2,571	3,127	1,775	241	22,739	2,406	442	750	2,711	1,977	10.5%	8.0%	2,377	493	114.0%			

Dwellings with non-electric space heat averaged 718 kWh net savings from lighting, refrigerators and freezers, water heating, and cooling measures. The average net savings for dwellings with electric heat averaged 2,711 kWh per dwelling.

COMPARISON OF SAMPLE AND OVERALL PROGRAM POPULATIONS

Measure-level savings are estimated for all weatherization clients. These are based upon the actual installed quantities and measure type (e.g., r-value and amount of insulation installed) and measured reductions in the air leakage rate. Consequently the dwelling-specific estimate savings provide a good basis of comparison between the sample and overall population. Table 2.8 provides a comparison of the estimated savings for the population and billing analysis sample for site-built single family homes and mobile homes.

Table 2.8 Estimated Savings for the Population and Billing Analysis Sample – Gas Heated Dwellings

	Natural Gas				Electricity			
	Population Est Savings (therms)	Count	Sample Est Savings (therms)	Count	Population Est Savings (kWh)	Count	Sample Est Savings (kWh)	Count
Site-Built Single Family								
Overall	287	1,100	283	700	546	1,221	610	215
New Opportunities	313	37	284	17	557	39	522	7
HACAP	272	95	293	56	398	100	423	14
Eastern IA	256	129	255	104	537	133	649	23
MATURA	217	21	200	10	513	23	829	1
MICA	276	66	282	43	505	85	625	11
Mid-Sioux	269	28	255	9	651	37	665	3
North Iowa	368	75	363	46	668	83	703	8
NE Iowa	202	70	192	44	311	91	394	14
New View	280	19	273	11	585	27	604	6
Threshold	288	81	286	50	569	90	525	18
IMPACT	291	27	299	17	487	30	593	4
SCICAP	263	22	268	9	512	24	769	3
SE Iowa	377	51	398	19	616	52	633	7
SIEDA	240	48	208	27	608	59	691	18
Upper Des Moines	271	99	264	76	471	105	567	17
West Central	266	43	250	31	634	52	768	9
CAA Siouxland	298	34	279	23	821	36	680	3
Polk County	332	155	339	108	626	155	663	49
Mobile Home								
Overall	182	99	190	63	463	236	447	20
Multi-Family								
Overall	272	49	276	22	482	94	532	9

The gas estimated savings compare well between the population and sample for the state overall gas results for all sectors. There is a little more variability between the population and sample at the agency levels but nothing of concern.

The electricity estimated savings show a little more variability between the population and sample at both the state and agency levels. The state (overall) savings for the population is about 10% lower than in our sample for site-built homes, 4% lower for mobile homes, and 9%

for multifamily homes. These differences are not particularly large, and demonstrate that the range and quantities of measures installed in both the sample and population are reasonably similar.

It's important to recognize that differences in estimated savings between the sample and population don't directly affect the adjustment factors that are applied to the estimated savings. The adjustment factors are the percentage difference between the estimated and observed savings *of the sample*. For example, if the observed sample impacts are 10% greater than the sample estimated impacts, then a 10% adjustment is applied to all houses. We need only be concerned if there are large differences between the estimated savings of the sample and the population, and the above table indicates that there are no significant differences.

Table 2.9 provides a similar comparison for the electricity billing analysis. As before, we see no large differences between the estimated savings for the population and the billing analysis sample. Note that the estimated electricity savings in the first line of Table 2.9 includes dwellings that are heated with any non-electric fuel (propane, fuel oil, natural gas, wood, etc.). Estimated electricity savings shown in Table 2.8 are for housing units heated with natural gas.

Table 2.9 Estimated Savings for the Population and Billing Analysis Sample - Electricity

	Population and Estimated Electricity Savings (State)			
	Population		Sample	
	Est Savings (kWh)	Count	Est Savings (kWh)	Count
Overall, non-electric ht	593	2,815	655	406
Overall, electric heat	2,464	161	2,377	30

3. DETAILED SPENDING AND IMPACT PROFILES BY FUNDING ENTITY

This section provides tables of spending and impacts for the utilities, the state, and the overall program. The tables are designed to provide information to meet the filing requirements for cost recovery.

The summaries of impacts for state and utility funding are similar in format to those provided in the earlier SLICE reports.

We show a second table for each of the utilities in this report. These tables show the combined impacts of electricity and natural gas measures from all funding sources. These tables should prove useful for the energy and demand planning departments at the utilities to account for the aggregate impacts of the low-income program, and not just the impacts funded by a specific utility.

Billing Adjusted Costs and Impacts for All Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$20,178,427

Utility Administration Expenditures: \$274,662

Total Labor and Material Expenditures: \$19,903,765

	Number of Dwellings with Impacts						Number of Dwellings with kWh Impacts						Spending on Materials & Labor (\$)	Billing Adjusted First-Year Savings										Average Billing Adjusted First Year Costs and Savings														
														Electricity			Gas		Propane	Fuel Oil	Other		per Dwelling Receiving Measures					Electricity		Gas		Propane	Fuel Oil	Other				
Measure	Total	Electric	Gas	Propane	Fuel Oil	Other	Cooling	Heating				Summer kWh	Winter kWh	Annual kWh	Pk-Day therms	Annual therms	gallons	gallons	Mbtu		Spending on Materials & Labor (\$)	Summer kWh	Winter kWh	Annual kWh	Pk-Day therms	Annual therms	gallons	gallons	Mbtu		Summer kWh	Winter kWh	Annual kWh	Pk-Day therms	Annual therms	gallons	gallons	Mbtu
Total Efficiency Measures	1,463	1,463	1,248	127	7	0	1,460	1,463			11,031,637	304.1	257.9	1,002,126	3,183	306,262	30,606	977	0		7,540	0.208		0.176		685	2.55		245		241	140	-					
Total Shell & Htg. Sys. Repl	1,463	1,462	1,248	127	7	0	1,429	1,462			9,123,235	264.9	298,387	205.6	315,282	613,668	2,988	272,180	29,214	977	0	6,236	0.185	209	0.141	216	420	2.39		218		230	140	-				
Total Shell Measures	1,463	1,462	1,248	127	7	0	1,429	1,462			5,998,930	264.9	298,387	204.0	312,719	611,106	1,800	164,116	17,530	515	0	4,100	0.185	209	0.140	214	418	1.44		132		138	74	-				
Wall Insul.	806	720	716	60	2	0	718	28			1,534,302	95.2	114,793	21.6	33,128	147,921	592	53,995	4,357	129	0	1,904	0.133	160	0.771	1,183	205	0.83		75		73	64	-				
Open Blown Ceiling Insul	1,192	1,087	1,017	106	5	0	1,081	64			1,000,414	99.4	119,877	49.8	76,020	195,897	532	48,498	6,359	223	0	839	0.092	111	0.778	1,188	180	0.52		48		60	45	-				
Cavity Fill Insul	393	326	349	27	0	0	323	17			304,282	16.1	19,400	9.9	15,168	34,568	162	14,790	1,235	0	0	774	0.050	60	0.581	892	106	0.46		42		46	-	-				
Attic Batt Insul	402	368	371	37	2	0	368	13			204,423	19.3	23,301	5.0	7,593	30,893	149	13,613	1,648	37	0	403	0.053	63	0.393	584	84	0.40		37		45	19	-				
Kneewall Insul	353	318	306	34	1	0	317	12			166,030	7.5	9,047	2.0	2,934	11,981	58	5,304	605	36	0	770	0.024	29	0.164	244	38	0.19		17		18	36	-				
Infltr. Reduction	1,435	1,309	1,222	125	7	0	1,302	81			1,182,412	19.8	23,885	11.4	17,516	41,401	230	20,948	2,358	62	0	824	0.015	18	0.140	216	32	0.19		17		19	9	-				
Found./Crawl. Insul	577	193	504	45	3	0	182	25			437,676	10.6	12,831	5.8	8,983	21,814	103	9,436	1,058	34	0	759	0.058	71	0.233	359	113	0.21		19		24	11	-				
Bandjoist Insul.	631	24	536	68	3	0	-	24			150,435	0.0	0	2.1	3,165	3,165	34	3,119	474	11	0	238	0.000	0	0.087	132	132	0.06		6		7	4	-				
Furnace Blower Fan ¹	1,381	1,363	1,247	127	7	0	-	1,363			0	0.0	0	119.1	182,983	182,983	(7)	(652)	(2)	0	0	0	0.000	0	0.087	134	134	(0.01)		(1)		(1)	(0)	-				
Exhaust Ventilator ²	1,111	1,111	953	92	4	0	1,111	1,111			1,018,951	-3.0	(24,748)	(22.6)	(34,769)	(59,517)	(54)	(4,936)	(496)	(1																		

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Iowa Division of Community Action Agencies

Billing Adjusted Costs and Impacts for DCAA-Funded Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$13,769,231

Utility Administration Expenditures: -

Total Labor and Material Expenditures: \$13,769,231

Measure	Number of Dwellings with Impacts						Number of Dwellings with kWh Impacts						Billing Adjusted First-Year Savings										Average Billing Adjusted First Year Costs and Savings per Dwelling Receiving Measures											
	Total	Electric	Gas	Propane	Fuel Oil	Other	Season Cooling	Heating	Spending on Materials & Labor (\$)	Summer kW	Winter kWh	Annual kWh	Pk-Day therms	Gas Annual therms	Propane gallons	Fuel Oil gallons	Other Mbtu	Spending on Materials & Labor (\$)	Summer kW	Winter kWh	Annual kWh	Pk-Day therms	Gas Annual therms	Propane gallons	Fuel Oil gallons	Other Mbtu								
Total Efficiency Measures	1,459	1,456	1,243	127	7	0	1,415	1,456	5,836,807	121.7	114.6	410,831	1,123	108,803	30,606	977	0	4,001	0.086	0.079	282	0.90	88	241	140	-								
Total Shell & Htg. Sys. Repl	1,455	1,455	1,240	127	7	0	1,401	1,455	4,959,074	105.3	105,966	94.1	144,045	250,011	1,046	95,415	29,214	977	0	3,408	0.075	76	0.065	99	172	0.84	77	230	140	-				
Total Shell Measures	1,455	1,455	1,240	127	7	0	1,401	1,455	3,405,771	105.3	105,966	93.1	142,517	248,484	628	57,324	17,530	515	0	2,341	0.075	76	0.064	98	171	0.51	46	138	74	-				
Wall Insul.	409	338	269	60	2	0	335	15	552,076	35.6	42,991	8.3	12,658	55,649	172	15,810	4,357	129	0	1,350	0.106	128	0.553	844	165	0.64	59	73	64	-				
Open Blown Ceiling Insul	611	491	373	106	5	0	487	27	387,494	39.1	47,099	16.9	25,633	72,732	181	16,427	6,359	223	0	634	0.080	97	0.627	949	148	0.48	44	60	45	-				
Cavity Fill Insul	175	129	125	27	0	0	128	6	102,420	5.2	6,276	2.2	3,378	9,654	45	4,140	1,235	0	0	585	0.041	49	0.366	563	75	0.36	33	46	-	-				
Sloped Attic Insul	196	136	117	37	2	0	136	5	69,311	6.5	7,816	1.9	2,915	10,732	39	3,594	1,648	37	0	354	0.048	57	0.383	583	79	0.34	31	45	19	-				
Kneewall Insul	176	129	105	34	1	0	127	5	64,143	3.1	3,691	0.8	1,227	4,918	19	1,721	605	36	0	364	0.024	29	0.163	245	38	0.18	16	18	36	-				
Infil. Reduction	1,354	1,143	1,105	125	7	0	1,136	73	970,146	15.4	18,536	9.3	14,435	32,972	178	16,165	2,358	62	0	717	0.014	16	0.128	198	29	0.16	15	19	9	-				
Found/Crawl. Insul	264	75	185	45	3	0	69	10	175,884	3.6	4,305	2.0	3,139	7,443	43	3,923	1,058	34	0	666	0.052	62	0.236	314	99	0.23	21	24	11	-				
Bandjoist Insul	263	12	180	68	3	0	-	12	65,336	0.0	0	0.9	1,389	1,389	9	827	474	11	0	248	0.000	0	0.076	116	116	0.05	5	7	4	-				
Furnace Blower Fan ¹	1,302	1,302	1,168	127	7	0	-	1,302	0	0.0	0	73.3	112,512	112,512	(4)	(346)	(66)	(2)	0	0	0.000	0	0.056	86	86	(0.00)	(0)	(1)	(0)	-				
Exhaust Ventilator ²	1,111	1,111	953	92	4	0	1,111	1,111	1,018,951	-3.0	(24,748)	(22.6)	(34,769)	(59,517)	(54)	(4,936)	(496)	(14)	0	917	-0.003	(22)	(0.020)	(31)	(54)	(0.06)	(5)	(5)	(4)	-				
Total Heating System Repl	543	17	431	90	5	0	-	17	1,553,303	0.0	0	1,527	1,527	418	38,091	11,684	462	0	2,861	0.000	0	0.059	90	90	0.97	88	130	92	-	-				
Condensing Htg Sys Repl	477	0	392	81	4	0	-	-	1,348,459	0.0	0	0.0	0	0	387	35,288	10,871	401	0	2,827	-	-	-	-	-	0.99	90	134	100	-	-			
Non-Cond Htg Sys Repl	50	0	39	10	1	0	-	-	130,574	0.0	0	0.0	0	0	31	2,802	813	61	0	2,611	-	-	-	-	-	0.80	72	81	61	-	-			
Electric Htg Sys Repl	11	11	0	0	0	0	-	11	40,339	0.0	0	0.6	874	874	0	0	0	0	0	3,667	0.000	0	0.053	79	79	-	-	-	-	-	-			
Heat Pump Repl	6	6	0	0	0	0	-	6	33,930	0.0	0	0.4	653	653	0	0	0	0	0	5,655	0.000	0	0.070	109	109	-	-	-	-	-	-			
Other Htg Sys Repl	0	0	0	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-			
Measure	Number of Measures Installed by Fuel Type						Number of Measures Installed by Fuel Type						Billing Adjusted First-Year Savings										Average Billing Adjusted First Year Costs and Savings per Dwelling Receiving Measures											
	Total	Electric	Gas	Propane	Fuel Oil	Other	Total	Electric	Gas	Propane	Fuel Oil	Other	Summer kW	Winter kWh	Annual kWh	Pk-Day therms	Gas Annual therms	Propane gallons	Fuel Oil gallons	Other Mbtu		Summer kW	Winter kWh	Annual kWh	Pk-Day therms	Gas Annual therms	Propane gallons	Fuel Oil gallons	Other Mbtu					
Water Heating	896	187	661	48	0	0	1,275	284	897	93	0	0	739,652	0.0	0.3	20,261	77.1	13,388	1,392	0	0	826	0.000	0.002	108	0.117	20	29	-	-	-	-		
Temp. Reduct.	1	1	0	0	0	0	1	1	0	0	0	0	0	0.0	0.0	113	0.0	0	0	0	0	0	0.000	0.000	113	-	-	-	-	-	-	-		
WH Wrap	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-		
Pipe Insul.	523	142	342	39	0	0	523	142	342	39	0	0	8,195	0.0	0.0	6,013	2.9	1,024	117	0	0	16	0.000	0.000	42	0.01	3	3	-	-	-	-		
LF Showerhead	78	25	48	5	0	0	83	26	52	5	0	0	758	0.0	0.0	4,328	1.1	341	37	0	0	10	0.000	0.004	173	0.02	7	7	-	-	-	-		
Faucet Aerator	134	30	94	10	0	0	226	51	162	12	0	0	933	0.0	0.0	1,656	0.7	230	19	0	0	7	0.000	0.001	55	0.01	2	2	-	-	-	-		
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-		
Hi-Eff or Electric Wtr Htr Repl.	682	83	562	37	0	0	442	64	341	37	0	0	729,796	0.0	0.2	8,150	72.3	11,794	1,219	0	0	1,070	0.000	0.002	98	0.13	21	33	-	-	-	-		
Lighting	395	395					3,287	3,287					21,612	5.3	9.8	50,445	-	-	-	-	-	55	0.013	0.025	128	-	-	-	-	-	-	-	-	
Refrigerator/Freezer ³	197	197					176	176					116,469	11.1	10.4	90,114	-	-	-	-	-	591	0.056	0.053	457	-	-	-	-	-	-	-	-	
Refrigerator Removal	2	2					2	2					115	0.1	1,023	58	-	-	-	-	-	58	0.063	0.059	512	-	-	-	-	-	-	-	-	
Refrigerator Exchange	153	153					123	123					95,903	7.6	7.1	61,758	-	-	-	-	-	627	0.050	0.046	404	-	-	-	-	-	-	-	-	
Freezer Removal	2	2					2	2					50	0.1	0.1	1,068	-	-	-	-	-	25	0.066	0.061	534	-	-	-	-	-	-	-	-	
Freezer Exchange	55	55					49	49					20,401	3.2	3.0	26,265	-	-	-	-	-	371	0.059	0.055	478	-	-	-	-	-	-	-	-	
Total Non-Efficiency Measures	1,471								7,932,424													5,393												
Misc Ins. Attic Access/Ven	1,225								348,718																									
Duct Sealing	485								93,773																									
Duct Insulation	663								73,098																									
Damming Material	761								47,282																									
Htg. Sys. Tune & Clear	288								64,304																									
Htg. Sys./WH Other	346								179,010																									
Air Conditioning Work	30								1,846																									
Water Heater Repair	95								12,318																									
Refrigerator Coil Clean	0								0																									
Waterbed Mattress Pad	0								0																									
Programmable Tstat	1								100																									
Unspecified Utility Meas	0								0																									
CO Detector	1,330																																	

Alliant - Interstate Power and Light
Billing Adjusted Costs and Impacts for Utility-Funded Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$3,177,331

Utility Administration Expenditures: \$144,677

Total Labor and Material Expenditures: \$3,032,654

Measure	Number of Dwellings with Impacts			Number of Dwellings with Electricity Impacts		Spending on Materials & Labor (\$)	Billing Adjusted First-Year Savings						Average Billing Adjusted First Year Costs and Savings per Dwelling Receiving Measures						
	Total	Electric	Gas	Season Cooling	Heating		Summer kW	Electricity		Annual kWh	Pk-Day therms	Gas Annual therms	Spending on Materials & Labor (\$)	Summer kW	Electricity		Annual kWh	Pk-Day therms	Gas Annual therms
								kWh	kWh						kWh	kWh			
Total Efficiency Measures	655	569	419	558	569	2,550,258	99.5		69.7	310,473	978	93,161	3,894	0.178	0.123	546	2.33	222	
Total Shell & Htg. Sys. Repl	631	544	418	481	543	2,080,183	87.3	105,301	52.7	81,246	186,547	926	84,028	3,297	0.182	0.097	150	343	2.21
Total Shell Measures	630	543	418	481	542	1,315,621	87.3	105,301	52.2	80,364	185,666	549	49,919	2,088	0.182	0.096	148	342	1.31
Wall Insul.	318	258	230	258	10	486,761	32.2	38,809	7.7	12,084	50,893	206	18,717	1,531	0.125	0.073	1,208	197	0.90
Open Blown Ceiling Insul.	461	378	332	378	15	303,557	32.3	38,959	11.4	17,379	56,337	147	13,405	658	0.085	0.103	0.762	1,159	0.44
Cavity Fill Insul.	129	102	91	100	3	86,689	5.8	7,033	3.4	5,220	12,254	49	4,442	672	0.058	0.070	1.141	1,740	0.54
Sloped Attic Insul.	177	144	133	144	4	68,632	7.2	8,660	1.1	1,694	10,354	56	5,134	388	0.050	0.060	0.280	424	0.42
Kneewall Insul.	139	113	105	113	3	55,208	2.6	3,096	0.4	561	3,657	16	1,470	397	0.023	0.027	0.125	187	0.15
Infil. Reduction	403	321	294	321	19	133,330	2.9	3,485	1.6	2,458	5,943	31	2,818	331	0.009	0.011	0.084	129	0.11
Found./Crawl. Insul.	206	76	176	74	9	133,496	4.4	5,259	2.3	3,534	8,793	29	2,628	648	0.059	0.071	0.252	393	0.16
Bandjoist Insul.	205	9	196	-	9	47,949	0.0	0	0.9	1,400	1,400	16	1,454	234	0.000	0	0.102	156	0.08
Furnace Blower Fan ¹	605	518	418	-	518	0	0.0	0	23.3	36,035	36,035	(2)	(147)	0	0.000	0	0.045	70	(0.00)
Exhaust Ventilatio ²	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-
Total Heating System Repl	300	8	292	-	8	764,661	0.0	0	0.6	881	881	376	34,109	2,549	0.000	0	0.070	110	1.29
Condensing Htg Sys Repl	292	0	292	-	-	743,614	0.0	0	0.0	0	0	376	34,109	2,547	-	-	-	-	1.29
Non-Cond Htg Sys Repl	0	0	0	-	-	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-
Electric Htg Sys Repl	7	7	0	-	7	17,447	0.0	0	0.5	839	839	0	0	2,492	0.000	0	0.076	120	-
Heat Pump Repl	1	1	0	-	1	3,500	0.0	0	0.0	43	43	0	0	3,500	0.000	0	0.029	43	-
Other Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-
	Total	Electric	Gas	Total	Electric	Gas	Summer kW		Winter kW	Annual kWh	Pk-Day therms	Annual therms		Summer kW		Winter kW	Annual kWh	Pk-Day therms	Annual therms
Water Heating	435	147	288	846	256	590	381,951	0.0	0.3	16,915	52.7	9,133	878	0.000	0.002	115	0.183	32	
Temp. Reduct.	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-
WH Wrap	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-
Pipe Insul.	342	134	208	342	134	208	3,707	0.0	0.0	5,654	1.8	630	11	0.000	0.000	0.000	42	0.01	3
LF Showerhead	62	21	41	64	22	42	392	0.0	0.1	3,643	0.8	261	6	0.000	0.004	0.004	173	0.02	6
Faucet Aerator	116	36	80	172	54	118	407	0.0	0.0	1,757	0.5	152	4	0.000	0.001	0.001	49	0.01	2
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-
Hi-Eff or Electric Wtr Htr Repl.	293	49	244	268	46	222	377,447	0.0	0.1	5,862	49.6	8,090	1,288	0.000	0.003	0.003	120	0.20	33
Lighting	389	389		3,324	3,323		16,918	5.8	10.8	55,650	-	-	43	0.015	0.028	0.028	143	-	-
Refrigerator/Freezer ³	102	102		101	101		71,206	6.3	5.9	51,361	-	-	698	0.062	0.058	0.058	504	-	-
Refrigerator Removal	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-	-
Refrigerator Exchange	86	86		81	81		61,766	5.0	4.7	40,540	-	-	718	0.058	0.054	0.054	471	-	-
Freezer Removal	1	1		1	1		40	0.1	0.1	534	-	-	40	0.066	0.061	0.061	534	-	-
Freezer Exchange	20	20		19	19		9,400	1.3	1.2	10,287	-	-	470	0.063	0.059	0.059	514	-	-
Total Non-Efficiency Measures	653						482,396						739						
Misc Ins,Attic Access/Vent	176						25,202												143
Duct Sealing	12						2,367												197
Duct Insulation	11						1,501												136
Damming Material	0						0												0
Htg. Sys. Tune & Clean	59						6,410												109
Htg. Sys./WH Other	0						0												0
Air Conditioning Work	0						0												0
Water Heater Repair	0						0												0
Refrigerator Coil Clean	0						0												0
Waterbed Mattress Pad	0						0												0
Programmable Tstat	27						2,610												97
Unspecified Utility Meas.	0						0												0
CO Detector	0						0												0
Smoke Detector	0						0												0
Fuses	0						0												0
Htg Sys Safety Check	0						0												0
Htg Sys Ventilation	208						38,001												183
Water Heater Ventilation	138						20,740												150
Bathroom Ventilation	0						0												0
Dryer Ventilation	0						0												0
Kitchen Ventilation	0						0												0
Other Exhaust Ventilation	0						0												0
Asbestos Removal (Minor)	0						0												0
Health/Safety Repairs	61						3,784												62
Health/Safety Other	0						0												0
Consumables	0						0												0
General Repairs	312						77,965												250
Meter Refrig (no action)	134						0												0
Meter Freezer (no action)	49						0												0
Support	651						303,815												467
Transportation Allowance	0						0												0
Landlord Contr Misc	0						0												0
Landlord Contr Furnace	0						0												0
Landlord Contr DHW	0						0												0
Client Contr (Any)	0						0												0
Lead Safe Work	0						0												0
Unspecified/Other	0						0												0

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Alliant - Interstate Power and Light
Billing Adjusted Impacts for All Customers of the Utility From All Funding Sources

Measure	Number of Dwellings with Impacts			Number of Dwellings with Electricity Impacts			Billing Adjusted First-Year Savings					Average Billing Adjusted Savings per Dwelling Receiving Measures							
	Total	Electric	Gas	Season		Electricity		Annual kWh	Gas		Electricity			Gas					
				Cooling	Heating	Summer kWh	Winter kWh		Pk-Day therms	Annual therms	Summer kWh	Winter kWh	Annual kWh	Pk-Day therms	Annual therms				
Total Efficiency Measures	695	604	429	602	604	114.7	95.2	378,886	1,112	105,994	0.191	0.158	627	2.59	247				
Total Shell & Htg. Sys. Repl	695	604	429	588	604	99.4	111,942	74.8	115,153	227,095	1,050	95,271	0.169	190	0.124	191	376	2.45	222
Total Shell Measures	695	604	429	588	604	99.4	111,942	73.9	113,748	225,689	614	55,865	0.169	190	0.122	188	374	1.43	130
Wall Insul.	339	276	237	276	11	35.4	42,719	9.0	14,089	56,808	217	19,660	0.128	155	0.814	1,281	206	0.91	83
Open Blown Ceiling Insul.	505	414	345	414	17	36.4	43,950	12.3	18,668	62,618	156	14,211	0.088	106	0.724	1,098	151	0.45	41
Cavity Fill Insul.	134	105	93	103	3	6.1	7,362	3.6	5,535	12,897	50	4,565	0.059	71	1.205	1,845	123	0.54	49
Sloped Attic Insul.	190	151	142	151	4	7.6	9,118	1.1	1,694	10,812	60	5,507	0.050	60	0.280	424	72	0.43	39
Kneewall Insul.	149	121	109	121	3	2.9	3,489	0.4	561	4,050	17	1,536	0.024	29	0.125	187	33	0.15	14
Infil. Reduction	651	533	419	532	30	7.6	9,134	4.4	6,764	15,898	87	7,896	0.014	17	0.146	225	30	0.21	19
Found./Crawl. Insul.	217	81	184	78	10	4.6	5,553	2.5	3,829	9,382	30	2,715	0.059	71	0.247	383	116	0.16	15
Bandjoist Insul.	218	11	207	-	11	0.0	0	1.0	1,600	1,600	17	1,525	0.000	0	0.095	145	145	0.08	7
Furnace Blower Fan ¹	662	571	429	-	571	0.0	0	48.0	73,991	73,991	(2)	(222)	0.000	0	0.084	130	130	(0.01)	(1)
Exhaust Ventilation ²	484	422	289	422	422	-1.2	(9,382)	(8.4)	(12,983)	(22,366)	(17)	(1,528)	-0.003	(22)	(0.020)	(31)	(53)	(0.06)	(5)
Total Heating System Repl	328	12	316	-	12	0.0	0	0.9	1,405	1,405	435	39,406	0.000	0	0.076	117	117	1.38	125
Condensing Htg Sys Repl	307	0	307	-	-	0.0	0	0.0	0	0	424	38,362	-	-	-	-	-	1.38	125
Non-Cond Htg Sys Repl	11	0	11	-	-	0.0	0	0.0	0	0	12	1,043	-	-	-	-	-	1.06	95
Electric Htg Sys Repl	11	11	0	-	11	0.0	0	0.8	1,285	1,285	0	0	0.000	0	0.075	117	117	-	-
Heat Pump Repl	1	1	0	-	1	0.0	0	0.1	120	120	0	0	0.000	0	0.082	120	120	-	-
Other Htg Sys Repl	0	0	0	-	0	0.0	0	0.0	0	0	0	0	-	-	-	-	-	-	-
	Total	Electric	Gas	Number of Measures by Fuel Type			Summer kWh	Winter kWh	Annual kWh	Pk-Day therms	Annual therms	Summer kWh	Winter kWh	Annual kWh	Pk-Day therms	Annual therms			
Water Heating	475	164	311	0	0	0	0.0	0.3	18,947	61.9	10,723	0.000	0.002	116	0.199	34			
Temp. Reduct.	0	0	0	0	0	0	0.0	0.0	0	0.0	0	-	-	-	-	-			
WH Wrap	0	0	0	0	0	0	0.0	0.0	0	0.0	0	-	-	-	-	-			
Pipe Insul.	414	151	263	0	0	0	0.0	0.0	6,374	2.3	812	0.000	0.000	42	0.01	3			
LF Showerhead	63	22	41	0	0	0	0.0	0.1	3,814	0.8	261	0.000	0.004	173	0.02	6			
Faucet Aerator	119	37	82	0	0	0	0.0	0.0	1,789	0.5	155	0.000	0.001	48	0.01	2			
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0.0	0.0	0	0.0	0	-	-	-	-	-			
Hi-Eff or Electric Wtr Htr Repl.	314	55	259	0	0	0	0.0	0.2	6,970	58.2	9,494	0.000	0.003	127	0.22	37			
Lighting	418	418	0	0	0	6.4	11.8	60,698	-	-	0.015	0.028	145	-	-				
Refrigerator/Freezer ³	123	123	0	0	0	8.9	8.3	72,147	-	-	0.072	0.067	587	-	-				
Refrigerator Removal	2	2	0	0	0	0.1	0.1	1,023	-	-	0.063	0.059	512	-	-				
Refrigerator Exchange	97	97	0	0	0	6.1	5.7	49,742	-	-	0.063	0.059	513	-	-				
Freezer Removal	3	3	0	0	0	0.2	0.2	1,602	-	-	0.066	0.061	534	-	-				
Freezer Exchange	37	37	0	0	0	2.4	2.3	19,779	-	-	0.066	0.061	535	-	-				

Black Hills Energy
Billing Adjusted Costs and Impacts for Utility-Funded Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$647,561

Utility Administration Expenditures: \$32,897

Total Labor and Material Expenditures: \$614,664

Measure	Number of Dwellings with Impacts			Number of Dwellings with Electricity Impacts		Spending on Materials & Labor (\$)	Billing Adjusted First-Year Savings						Average Billing Adjusted First Year Costs and Savings per Dwelling Receiving Measures						
	Total	Electric	Gas	Season Cooling	Heating		Summer kW	Electricity		Annual kWh	Gas		Spending on Materials & Labor (\$)	Summer kW	Electricity		Annual kWh	Gas	
								kWh	kWh		Pk-Day therms	Annual therms			kWh	kWh		Pk-Day therms	Annual therms
Total Efficiency Measures	130	0	130	0	0	514,513	0.0	0.0	0	195	18,835	3,958	-	-	-	1.50	145		
Total Shell & Htg. Sys. Repl	118	0	118	0	0	423,216	0.0	0	0	0	184	16,948	3,587	-	-	-	1.56	144	
Total Shell Measures	118	0	118	0	0	214,663	0.0	0	0	0	97	8,966	1,819	-	-	-	0.82	76	
Wall Insul.	61	0	61	0	0	83,963	0.0	0	0	0	36	3,389	1,376	-	-	-	0.60	56	
Open Blown Ceiling Insul.	84	0	84	0	0	49,018	0.0	0	0	0	23	2,161	584	-	-	-	0.28	26	
Cavity Fill Insul.	29	0	29	0	0	25,890	0.0	0	0	0	14	1,312	893	-	-	-	0.49	45	
Sloped Attic Insul.	30	0	30	0	0	10,320	0.0	0	0	0	9	840	344	-	-	-	0.30	28	
Kneewall Insul.	21	0	21	0	0	7,783	0.0	0	0	0	4	333	371	-	-	-	0.17	16	
Infil. Reduction	51	0	51	0	0	14,670	0.0	0	0	0	6	533	288	-	-	-	0.11	10	
Found./Crawl. Insul.	28	0	28	0	0	13,221	0.0	0	0	0	3	259	472	-	-	-	0.10	9	
Bandjoist Insul.	43	0	43	-	0	9,798	0.0	0	0	0	2	159	228	-	-	-	0.04	4	
Furnace Blower Fan ¹	118	0	118	-	0	0	0.0	0	0	0	(0)	(21)	0	-	-	-	(0.00)	(0)	
Exhaust Ventilatio ²	0	0	0	0	0	0	0.0	0	0	0	0	0	0	-	-	-	-	-	
Total Heating System Repl	83	0	83	-	0	208,553	0.0	0	0	0	87	7,982	2,513	-	-	-	1.05	96	
Condensing Htg Sys Repl	83	0	83	-	-	208,553	0.0	0	0	0	87	7,982	2,513	-	-	-	1.05	96	
Non-Cond Htg Sys Repl	0	0	0	-	-	0	0.0	0	0	0	0	0	0	-	-	-	-	-	
Electric Htg Sys Repl	0	0	0	-	0	0	0.0	0	0	0	0	0	0	-	-	-	-	-	
Heat Pump Repl	0	0	0	-	0	0	0.0	0	0	0	0	0	0	-	-	-	-	-	
Other Htg Sys Repl	0	0	0	-	0	0	0.0	0	0	0	0	0	0	-	-	-	-	-	
	Total	Electric	Gas	Number of Measures by Fuel Type			Summer kW	Winter kW	Annual kWh	Pk-Day therms	Annual therms		Summer kW	Winter kW	Annual kWh	Pk-Day therms	Annual therms		
Water Heating	92	0	92	169	0	169	91,297	0.0	0.0	0	10.8	1,888	992	-	-	-	0.117	21	
Temp. Reduct.	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	
WH Wrap	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	
Pipe Insul.	80	0	80	80	0	80	1,213	0.0	0.0	0	0.5	187	15	-	-	-	0.01	2	
LF Showerhead	5	0	5	5	0	5	50	0.0	0.0	0	0.1	31	10	-	-	-	0.02	6	
Faucet Aerator	18	0	18	29	0	29	127	0.0	0.0	0	0.1	35	7	-	-	-	0.01	2	
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	
Hi-Eff or Electric Wtr Htr Repl.	63	0	63	55	0	55	89,907	0.0	0.0	0	10.0	1,635	1,427	-	-	-	0.16	26	
Lighting	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-	
Refrigerator/Freezer ³	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-	
Refrigerator Removal	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-	
Refrigerator Exchange	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-	
Freezer Removal	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-	
Freezer Exchange	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-	
Total Non-Efficiency Measures	130					100,150							770						
Misc Ins,Attic Access/Vent	30					4,176							139						
Duct Sealing	0					0							0						
Duct Insulation	19					799							42						
Damming Material	0					0							0						
Htg. Sys. Tune & Clean	25					2,567							103						
Htg. Sys./WH Other	0					0							0						
Air Conditioning Work	0					0							0						
Water Heater Repair	0					0							0						
Refrigerator Coil Clean	0					0							0						
Waterbed Mattress Pad	0					0							0						
Programmable Tstat	1					100							100						
Unspecified Utility Meas.	0					0							0						
CO Detector	0					0							0						
Smoke Detector	0					0							0						
Fuses	0					0							0						
Htg Sys Safety Check	0					0							0						
Htg Sys Ventilation	67					13,934							208						
Water Heater Ventilation	49					9,680							198						
Bathroom Ventilation	0					0							0						
Dryer Ventilation	0					0							0						
Kitchen Ventilation	0					0							0						
Other Exhaust Ventilation	0					0							0						
Asbestos Removal (Minor)	0					0							0						
Health/Safety Repairs	12					849							71						
Health/Safety Other	0					0							0						
Consumables	0					0							0						
General Repairs	42					9,094							217						
Meter Refrig (no action)	0					0							0						
Meter Freezer (no action)	0					0							0						
Support	128					58,951							461						
Transportation Allowance	0					0							0						
Landlord Contr Misc	0					0							0						
Landlord Contr Furnace	0					0							0						
Landlord Contr DHW	0					0							0						
Client Contr (Any)	0					0							0						
Lead Safe Work	0					0							0						
Unspecified/Other	0					0							0						

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Black Hills Energy
Billing Adjusted Impacts for All Customers of the Utility From All Funding Sources

Measure	Number of Dwellings with Impacts			Number of Dwellings with Electricity Impacts Season Cooling Heating			Billing Adjusted First-Year Savings					Average Billing Adjusted Savings per Dwelling Receiving Measures					
							Electricity			Annual kWh	Gas		Electricity			Gas	
	Total	Electric	Gas	Summer kW	kWh	kWh	kWh	Pk-Day therms	Annual therms		Summer kW	kWh	kWh	kWh	Pk-Day therms	Annual therms	
Total Efficiency Measures	173	0	173	0	0	0.0	0.0	0	0	322	31,472	-	-	-	1.86	182	
Total Shell & Htg. Sys. Repl	173	0	173	0	0	0.0	0	0.0	0	303	28,165	-	-	-	1.75	163	
Total Shell Measures	173	0	173	0	0	0.0	0	0.0	0	164	15,349	-	-	-	0.95	89	
Wall Insul.	90	0	90	0	0	0.0	0	0.0	0	57	5,369	-	-	-	0.64	60	
Open Blown Ceiling Insul.	138	0	138	0	0	0.0	0	0.0	0	39	3,611	-	-	-	0.28	26	
Cavity Fill Insul.	43	0	43	0	0	0.0	0	0.0	0	21	2,010	-	-	-	0.50	47	
Sloped Attic Insul.	41	0	41	0	0	0.0	0	0.0	0	13	1,204	-	-	-	0.31	29	
Kneewall Insul.	34	0	34	0	0	0.0	0	0.0	0	5	462	-	-	-	0.15	14	
Infil. Reduction	166	0	166	0	0	0.0	0	0.0	0	26	2,443	-	-	-	0.16	15	
Found./Crawl. Insul.	56	0	56	0	0	0.0	0	0.0	0	6	604	-	-	-	0.12	11	
Bandjoist Insul.	80	0	80	-	0	0.0	0	0.0	0	3	311	-	-	-	0.04	4	
Furnace Blower Fan ¹	172	0	172	-	0	0.0	0	0.0	0	(1)	(60)	-	-	-	(0.00)	(0)	
Exhaust Ventilation ²	138	0	138	0	0	0.0	0	0.0	0	(7)	(605)	-	-	-	(0.05)	(4)	
Total Heating System Repl	128	0	128	-	0	0.0	0	0.0	0	139	12,815	-	-	-	1.08	100	
Condensing Htg Sys Repl	125	0	125	-	-	0.0	0	0.0	0	136	12,558	-	-	-	1.09	100	
Non-Cond Htg Sys Repl	3	0	3	-	-	0.0	0	0.0	0	3	257	-	-	-	0.93	86	
Electric Htg Sys Repl	0	0	0	-	0	0.0	0	0.0	0	0	0	-	-	-	-	-	
Heat Pump Repl	0	0	0	-	0	0.0	0	0.0	0	0	0	-	-	-	-	-	
Other Htg Sys Repl	0	0	0	-	0	0.0	0	0.0	0	0	0	-	-	-	-	-	
	Total	Electric	Gas	Number of Measures by Fuel Type			Summer kW	Winter kW	Annual kWh	Pk-Day therms	Annual therms	Summer kW	Winter kW	Annual kWh	Pk-Day therms	Annual therms	
Water Heating	130	0	130	0	0	0	0.0	0.0	0	19.1	3,307	-	-	-	0.147	25	
Temp. Reduct.	0	0	0	0	0	0	0.0	0.0	0	0.0	0	-	-	-	-	-	
WH Wrap	0	0	0	0	0	0	0.0	0.0	0	0.0	0	-	-	-	-	-	
Pipe Insul.	121	0	121	0	0	0	0.0	0.0	0	0.8	287	-	-	-	0.01	2	
LF Showerhead	6	0	6	0	0	0	0.0	0.0	0	0.1	38	-	-	-	0.02	6	
Faucet Aerator	21	0	21	0	0	0	0.0	0.0	0	0.1	41	-	-	-	0.01	2	
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0.0	0.0	0	0.0	0	-	-	-	-	-	
Hi-Eff or Electric Wtr Htr Repl.	104	0	104	0	0	0	0.0	0.0	0	18.0	2,942	-	-	-	0.17	28	
Lighting	0	0		0	0		0.0	0.0	0	-	-	-	-	-	-	-	
Refrigerator/Freezer ³	0	0		0	0		0.0	0.0	0	-	-	-	-	-	-	-	
Refrigerator Removal	0	0		0	0		0.0	0.0	0	-	-	-	-	-	-	-	
Refrigerator Exchange	0	0		0	0		0.0	0.0	0	-	-	-	-	-	-	-	
Freezer Removal	0	0		0	0		0.0	0.0	0	-	-	-	-	-	-	-	
Freezer Exchange	0	0		0	0		0.0	0.0	0	-	-	-	-	-	-	-	

MidAmerican Energy
Billing Adjusted Costs and Impacts for Utility-Funded Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$2,584,303

Utility Administration Expenditures: \$97,088

Total Labor and Material Expenditures: \$2,487,215

Measure	Number of Dwellings with Impacts			Number of Dwellings with Electricity Impacts Season		Spending on Materials & Labor (\$)	Billing Adjusted First-Year Savings						Average Billing Adjusted First Year Costs and Savings per Dwelling Receiving Measures									
	Total	Electric	Gas	Cooling	Heating		Summer kW	Electricity kWh	Winter kW	Electricity kWh	Annual kWh	Pk-Day therms	Gas Annual therms	Spending on Materials & Labor (\$)	Summer kW	Electricity kWh	Winter kW	Electricity kWh	Annual kWh	Pk-Day therms	Gas Annual therms	
Total Efficiency Measures	469	387	371	380	387	2,130,059	82.9		73.6		280,822	888	85,463	4,542	0.218		0.190		726	2.39	230	
Total Shell & Htg. Sys. Repl	455	374	366	328	374	1,660,763	72.2	87,119	58.8	89,991	177,110	833	75,790	3,650	0.220	266	0.157	241	474	2.28	207	
Total Shell Measures	455	374	366	328	374	1,062,875	72.2	87,119	58.7	89,838	176,957	527	47,907	2,336	0.220	266	0.157	240	473	1.44	131	
Wall Insul.	261	203	219	203	7	411,502	27.4	32,993	5.6	8,386	41,379	177	16,080	1,577	0.135	163	0.795	1,198	204	0.81	73	
Open Blown Ceiling Insul.	376	303	294	301	23	260,345	28.0	33,819	21.4	33,008	66,827	182	16,505	692	0.093	112	0.931	1,435	221	0.62	56	
Cavity Fill Insul.	142	109	122	108	9	89,283	5.1	6,091	4.3	6,570	12,660	54	4,896	629	0.047	56	0.474	730	116	0.44	40	
Sloped Attic Insul.	137	110	110	110	4	56,165	5.7	6,824	1.9	2,983	9,807	44	4,045	410	0.051	62	0.487	746	89	0.40	37	
Kneewall Insul.	114	93	90	93	4	38,896	1.9	2,261	0.8	1,145	3,406	20	1,781	341	0.020	24	0.195	286	37	0.22	20	
Infil. Reduction	174	138	150	138	7	64,266	1.5	1,864	0.4	623	2,487	16	1,433	369	0.011	14	0.060	89	18	0.10	10	
Found./Crawl. Insul.	159	51	141	46	8	115,066	2.7	3,268	1.5	2,310	5,578	29	2,626	724	0.059	71	0.190	289	109	0.20	19	
Bandjoist Insul.	136	6	130	-	6	27,352	0.0	0	0.2	375	375	7	679	201	0.000	0	0.041	63	63	0.06	5	
Furnace Blower Fan ¹	432	351	366	-	351	0	0.0	0	22.5	34,436	34,436	(2)	(138)	0	0.000	0	0.064	98	98	(0.00)	(0)	
Exhaust Ventilation ²	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-	
Total Heating System Repl	246	2	244	-	2	597,888	0.0	0	0.1	154	154	306	27,883	2,430	0.000	0	0.050	77	77	1.26	114	
Condensing Htg Sys Repl	244	0	244	-	-	590,888	0.0	0	0.0	0	0	306	27,883	2,422	-	-	-	-	-	1.26	114	
Non-Cond Htg Sys Repl	0	0	0	-	-	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-	
Electric Htg Sys Repl	1	1	0	-	1	3,500	0.0	0	0.1	78	78	0	0	3,500	0.000	0	0.051	78	78	-	-	
Heat Pump Repl	1	1	0	-	1	3,500	0.0	0	0.0	76	76	0	0	3,500	0.000	0	0.050	76	76	-	-	
Other Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-	
Measure	Total			Number of Measures by Fuel Type			Summer kW		Winter kW		Annual kWh	Pk-Day therms	Annual therms		Summer kW		Winter kW		Annual kWh	Pk-Day therms	Annual therms	
	Total	Electric	Gas	Total	Electric	Gas	Total	Electric	Total	Electric					Total	Electric	Total	Electric				
Water Heating	366	71	295	879	156	723	389,896	0.0	0.2		9,991	54.6	9,673	1,065	0.000		0.003		141	0.185	33	
Temp. Reduct.	0	0	0	0	0	0	0	0.0	0.0	0	0	0.0	0	0	-	-	-	-	-	-	-	
WH Wrap	0	0	0	0	0	0	0	0.0	0.0	0	0	0.0	0	0	-	-	-	-	-	-	-	
Pipe Insul.	326	62	264	326	62	264	5,659	0.0	0.0	0	2,631	2.4	817	17	0.000	0.000	0.000	0.000	42	0.01	3	
LF Showerhead	74	14	60	82	17	65	769	0.0	0.1	0	2,442	1.5	454	10	0.000	0.004	0.004	0.004	174	0.02	8	
Faucet Aerator	137	33	104	225	51	174	1,013	0.0	0.0	0	1,662	0.8	242	7	0.000	0.001	0.001	0.001	50	0.01	2	
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0.0	0.0	0	0	0.0	0	0	-	-	-	-	-	-	-	
Hi-Eff or Electric Wtr Htr Repl.	276	29	247	246	26	220	382,455	0.0	0.1	0	3,257	50.0	8,160	1,386	0.000	0.003	0.003	0.003	112	0.20	33	
Lighting	326	326		2,999	2,999		20,406	5.2	9.5		49,115	-	-	63	0.016		0.029		151	-	-	
Refrigerator/Freezer³	87	87		88	88		58,994	5.5	5.1		44,606	-	-	678	0.063		0.059		513	-	-	
Refrigerator Removal	0	0	0	0	0	0	0	0.0	0.0	0	0	-	-	0	-	-	-	-	-	-	-	
Refrigerator Exchange	80	80	0	77	77	0	53,452	4.8	4.5	0	38,887	-	-	668	0.060	0.056	0.056	0.056	486	-	-	
Freezer Removal	0	0	0	0	0	0	0	0.0	0.0	0	0	-	-	0	-	-	-	-	-	-	-	
Freezer Exchange	10	10	0	11	11	0	5,542	0.7	0.7	0	5,719	-	-	554	0.070	0.066	0.066	0.066	572	-	-	
Total Non-Efficiency Measures	473						357,156							755								
Misc Ins,Attic Access/Vent	112						12,724														114	
Duct Sealing	0						0														0	
Duct Insulation	14						1,206														86	
Damming Material	0						0														0	
Htg. Sys. Tune & Clean	83						9,131														110	
Htg. Sys./WH Other	0						0														0	
Air Conditioning Work	0						0														0	
Water Heater Repair	0						0														0	
Refrigerator Coil Clean	0						0														0	
Waterbed Mattress Pad	0						0														0	
Programmable Tstat	27						2,375														88	
Unspecified Utility Meas.	0						0														0	
CO Detector	0						0														0	
Smoke Detector	0						0														0	
Fuses	0						0														0	
Htg Sys Safety Check	0						0														0	
Htg Sys Ventilation	170						28,030														165	
Water Heater Ventilation	162						24,053														148	
Bathroom Ventilation	0						0														0	
Dryer Ventilation	0						0														0	
Kitchen Ventilation	0						0														0	
Other Exhaust Ventilation	0						0														0	
Asbestos Removal (Minor)	0						0														0	
Health/Safety Repairs	59						2,821														48	
Health/Safety Other	0						0														0	
Consumables	0						0														0	
General Repairs	163						36,820														226	
Meter Refrig (no action)	102						0														0	
Meter Freezer (no action)	30						0														0	
Support	408						239,995														588	
Transportation Allowance	0						0														0	
Landlord Contr Misc	0						0														0	
Landlord Contr Furnace	0						0														0	
Landlord Contr DHW	0						0														0	
Client Contr (Any)	0						0														0	
Lead Safe Work	0						0														0	
Unspecified/Other	0						0														0	

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

MidAmerican Energy
Billing Adjusted Impacts for All Customers of the Utility From All Funding Sources

Measure	Number of Dwellings with Impacts			Number of Dwellings with Electricity Impacts			Billing Adjusted First-Year Savings					Average Billing Adjusted Savings per Dwelling Receiving Measures							
	Total	Electric	Gas	Season Cooling	Heating	Electricity			Pk-Day therms	Gas Annual therms	Electricity			Pk-Day therms	Gas Annual therms				
						Summer kW	Winter kWh	Annual kWh			Summer kW	Winter kWh	Annual kWh						
Total Efficiency Measures	729	614	603	613	614	140.2	119.4	452,617	1,634	157,973	0.229	0.195	737	2.71	262				
Total Shell & Htg. Sys. Repl	728	613	603	605	613	123.0	138,624	96.3	147,444	286,068	1,526	138,910	0.203	229	0.157	241	467	2.53	230
Total Shell Measures	728	613	603	605	613	123.0	138,624	95.9	146,780	285,403	955	86,945	0.203	229	0.156	239	466	1.58	144
Wall Insul.	418	328	365	328	8	45.0	54,253	6.0	9,058	63,312	299	27,177	0.137	165	0.747	1,132	193	0.82	74
Open Blown Ceiling Insul.	607	492	495	490	32	47.1	56,753	26.1	40,133	96,886	320	29,035	0.096	116	0.817	1,254	197	0.65	59
Cavity Fill Insul.	231	181	205	180	12	7.7	9,298	5.3	8,171	17,468	83	7,568	0.043	52	0.443	681	97	0.40	37
Sloped Attic Insul.	208	162	173	162	6	8.5	10,243	3.0	4,587	14,830	69	6,365	0.052	63	0.499	765	92	0.40	37
Kneewall Insul.	184	146	152	146	5	3.2	3,829	0.8	1,154	4,984	34	3,128	0.022	26	0.157	231	34	0.23	21
Infil. Reduction	714	555	594	553	33	9.0	10,824	4.5	7,048	17,872	107	9,793	0.016	20	0.137	214	32	0.18	16
Found./Crawl. Insul.	263	73	240	67	10	4.0	4,783	2.0	3,053	7,837	63	5,780	0.059	71	0.198	305	107	0.26	24
Bandjoist Insul.	235	6	229	-	6	0.0	0	0.3	513	513	12	1,107	0.000	0	0.056	86	86	0.05	5
Furnace Blower Fan ¹	695	580	603	-	580	0.0	0	58.1	88,649	88,649	(4)	(348)	0.000	0	0.100	153	153	(0.01)	(1)
Exhaust Ventilation ²	604	511	499	511	511	-1.4	(11,360)	(10.2)	(15,588)	(26,948)	(29)	(2,660)	-0.003	(22)	(0.020)	(31)	(53)	(0.06)	(5)
Total Heating System Repl	459	6	453	-	6	0.0	0	0.4	664	664	571	51,965	0.000	0	0.071	111	111	1.26	115
Condensing Htg Sys Repl	428	0	428	-	-	0.0	0	0.0	0	0	554	50,463	-	-	-	-	-	1.29	118
Non-Cond Htg Sys Repl	25	0	25	-	-	0.0	0	0.0	0	0	17	1,501	-	-	-	-	-	0.67	60
Electric Htg Sys Repl	2	2	0	-	2	0.0	0	0.1	208	208	0	0	0.000	0	0.068	104	104	-	-
Heat Pump Repl	4	4	0	-	4	0.0	0	0.3	456	456	0	0	0.000	0	0.073	114	114	-	-
Other Htg Sys Repl	0	0	0	-	0	0.0	0	0.0	0	0	0	0	-	-	-	-	-	-	-
				Number of Measures by Fuel Type			Summer kW	Winter kW	Annual kWh	Pk-Day therms	Annual therms	Summer kW	Winter kW	Annual kWh	Pk-Day therms	Annual therms			
	Total	Electric	Gas	Total	Electric	Gas													
Water Heating	631	108	523	0	0	0	0.0	0.3	15,963	108.5	19,063	0.000	0.003	148	0.208	36			
Temp. Reduct.	0	0	0	0	0	0	0.0	0.0	0	0.0	0	-	-	-	-	-			
WH Wrap	0	0	0	0	0	0	0.0	0.0	0	0.0	0	-	-	-	-	-			
Pipe Insul.	581	96	485	0	0	0	0.0	0.0	4,078	4.3	1,481	0.000	0.000	42	0.01	3			
LF Showerhead	124	23	101	0	0	0	0.0	0.1	4,006	2.5	754	0.000	0.004	174	0.02	7			
Faucet Aerator	235	45	190	0	0	0	0.0	0.1	2,410	1.5	459	0.000	0.001	54	0.01	2			
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0.0	0.0	0	0.0	0	-	-	-	-	-			
Hi-Eff or Electric Wtr Htr Repl.	495	43	452	0	0	0	0.0	0.1	5,469	100.3	16,369	0.000	0.003	127	0.22	36			
Lighting	499	499		0	0		7.3	13.5	69,775	-	-	0.015	0.027	140	-	-			
Refrigerator/Freezer ³	146	146		0	0		9.9	9.3	80,811	-	-	0.068	0.064	553	-	-			
Refrigerator Removal	0	0		0	0		0.0	0.0	0	-	-	-	-	-	-	-			
Refrigerator Exchange	131	131		0	0		8.2	7.6	66,350	-	-	0.062	0.058	506	-	-			
Freezer Removal	0	0		0	0		0.0	0.0	0	-	-	-	-	-	-	-			
Freezer Exchange	26	26		0	0		1.8	1.7	14,461	-	-	0.068	0.064	556	-	-			

4. DETAILED SPENDING AND IMPACT PROFILES BY AGENCY

This section provides tables of spending and impacts by agency for state and utility expenditures. Energy impacts were estimated according to the statewide algorithms, which include agency-specific adjustments.

Billing Adjusted Costs and Impacts for All Measures Installed During Calendar Year 2016

Total Labor and Material Expenditures: \$866,624

² Estimates are based upon reduced usage of the furnace due to shell improvements

³ Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

⁴ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed

Dalhoff Associates, LLC

Total Reported Labor, Materials and Utility Admin Expenditures:	\$2,292,248
Utility Administration Expenditures:	-
Total Labor and Material Expenditures:	\$2,292,248

² Estimates are based upon reduced usage of the furnace due to shell improvements

³ Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

⁴ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Dalhoff Associates, LLC

Community Action of Eastern Iowa
Billing Adjusted Costs and Impacts for All Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$2,085,733
Utility Administration Expenditures: -
Total Labor and Material Expenditures: \$2,085,733

Measure	Number of Dwellings with Impacts						Number of Dwellings with kWh Impacts		Spending on Materials & Labor (\$)	Billing Adjusted First-Year Savings										Average Billing Adjusted First Year Costs and Savings per Dwelling Receiving Measures											
	Total	Electric	Gas	Propane	Fuel Oil	Other	Season Cooling	Heating		Summer kW	Winter kWh	Annual kWh	Pk-Day therms	Gas Annual therms	Propane gallons	Fuel Oil gallons	Other Mbtu	Spending on Materials & Labor (\$)		Summer kW	Winter kWh	Annual kWh	Pk-Day therms	Gas Annual therms	Propane gallons	Fuel Oil gallons	Other Mbtu				
Total Efficiency Measures	159	159	152	4	0	0	159	159	1,219,359	28.4	17.0	88,622	402	39,528	1,050	0	0	7,669	0.179	0.107	557	2.64	260	262	-	-	-				
Total Shell & Htg. Sys. Repl	159	159	152	4	0	0	157	159	985,670	23.8	26,646	10.7	16,444	43,090	371	34,079	921	0	0	6,199	0.152	170	0.067	103	271	2.44	224	230	-	-	
Total Shell Measures	159	159	152	4	0	0	157	159	539,103	23.8	26,646	10.7	16,444	43,090	198	18,176	390	0	0	3,391	0.152	170	0.067	103	271	1.30	120	98	-	-	
Wall Insul.	79	78	79	0	0	0	78	0	121,630	9.0	10,840	0.0	0	10,840	68	6,214	0	0	0	1,540	0.115	139	0.000	0	139	0.86	79	-	-	-	
Open Blown Ceiling Insul	110	108	105	4	0	0	108	1	56,048	8.3	9,967	0.2	282	10,249	45	4,179	219	0	0	510	0.077	92	0.183	282	95	0.43	40	55	-	-	
Cavity Fill Insul	37	33	37	0	0	0	33	0	24,496	1.7	2,011	0.0	0	2,011	22	1,993	0	0	0	662	0.051	61	0.000	0	61	0.59	54	-	-	-	
Sloped Attic Insul	38	34	38	0	0	0	34	0	14,975	1.6	1,969	0.0	0	1,969	17	1,590	0	0	0	394	0.048	58	0.000	0	58	0.46	42	-	-	-	
Kneewall Insul	35	31	35	0	0	0	31	0	24,093	0.7	853	0.0	0	853	8	696	0	0	0	688	0.023	28	0.000	0	28	0.22	20	-	-	-	
Infil. Reduction	157	154	150	4	0	0	154	3	125,792	2.0	2,464	0.1	137	2,601	33	3,052	128	0	0	801	0.013	16	0.030	46	17	0.22	20	32	-	-	
Found/Crawl. Insul	49	16	47	2	0	0	16	0	35,035	0.8	961	0.0	0	961	7	680	62	0	0	715	0.050	60	0.000	0	60	0.16	14	31	-	-	
Bandjoist Insul.	108	0	107	1	0	0	-	0	42,959	0.0	0	0.0	0	0	5	494	5	0	0	398	-	-	-	-	-	0.05	5	5	-	-	
Furnace Blower Fan ¹	156	152	152	4	0	0	-	152	0	0.0	0	12.2	18,759	18,759	(1)	(75)	(2)	0	0	0	0.000	0	0.080	123	123	(0.01)	(0)	(1)	-	-	
Exhaust Ventilator ²	109	109	104	3	0	0	109	109	94,075	-0.3	(2,420)	(1.8)	(2,733)	(5,153)	(7)	(648)	(21)	0	0	863	-0.003	(22)	(0.016)	(25)	(47)	(0.07)	(6)	(7)	-	-	
Total Heating System Repl	129	0	125	4	0	0	-	0	446,568	0.0	0	0.0	0	0	173	15,904	530	0	0	3,462	-	-	-	-	-	1.38	127	133	-	-	
Condensing Htg Sys Repl	126	0	122	4	0	0	-	-	438,385	0.0	0	0.0	0	0	170	15,625	530	0	0	3,479	-	-	-	-	-	1.39	128	133	-	-	
Non-Cond Htg Sys Repl	3	0	3	0	0	0	-	-	8,183	0.0	0	0.0	0	0	3	279	0	0	0	2,728	-	-	-	-	-	1.01	93	-	-	-	
Electric Htg Sys Repl	0	0	0	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	
Heat Pump Repl	0	0	0	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	
Other Htg Sys Repl	0	0	0	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	
Measure	Number of Measures Installed by Fuel Type						Number of Measures Installed by Fuel Type		Spending on Materials & Labor (\$)	Billing Adjusted First-Year Savings										Average Billing Adjusted First Year Costs and Savings per Dwelling Receiving Measures											
	Total	Electric	Gas	Propane	Fuel Oil	Other	Total	Electric	Gas	Propane	Fuel Oil	Other	Summer kW	Winter kWh	Annual kWh	Pk-Day therms	Gas Annual therms	Propane gallons	Fuel Oil gallons	Other Mbtu	Spending on Materials & Labor (\$)	Summer kW	Winter kWh	Annual kWh	Pk-Day therms	Gas Annual therms	Propane gallons	Fuel Oil gallons	Other Mbtu		
Water Heating	158	31	124	3	0	0	398	75	316	7	0	0	200,504	0.0	0.1	5,304	31.3	5,449	129	0	0	1,269	0.000	0.003	171	0.252	44	43	-	-	
Temp. Reduct.	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	0	0	-	-	-	-	-	-	-	-	-	
WH Wrap	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	0	0	-	-	-	-	-	-	-	-	-	
Pipe Insul.	141	25	114	2	0	0	141	25	114	2	0	0	2,770	0.0	0.0	1,053	1.2	405	8	0	0	20	0.000	0.000	42	0.01	4	4	-	-	
LF Showerhead	30	10	20	0	0	0	30	10	20	0	0	0	305	0.0	0.0	1,736	0.5	169	0	0	0	10	0.000	0.004	174	0.03	8	-	-	-	-
Faucet Aerator	69	19	48	2	0	0	98	27	69	2	0	0	490	0.0	0.0	875	0.4	116	4	0	0	7	0.000	0.001	46	0.01	2	2	-	-	
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	0	0	-	-	-	-	-	-	-	-	-	
Hi-Eff or Electric Wtr Htr Repl.	129	13	113	3	0	0	129	13	113	3	0	0	196,938	0.0	0.0	1,642	29.2	4,760	118	0	0	1,527	0.000	0.003	126	0.26	42	39	-	-	
Lighting	134	134					1,109	1,109					7,792	2.1	4.0	20,444	-	-	-	-	58	0.016	0.030	153	-	-	-	-	-	-	-
Refrigerator/Freezer ³	36	36					39	39					25,393	2.4	2.3	19,784	-	-	-	-	705	0.068	0.063	550	-	-	-	-	-	-	-
Refrigerator Removal	0	0					0	0					0	0.0	0	0	-	-	-	-	0	-	-	-	-	-	-	-	-	-	-
Refrigerator Exchange	31	31					32	32					22,651	2.0	1.8	16,046	-	-	-	-	731	0.064	0.060	518	-	-	-	-	-	-	-
Freezer Removal	0	0					0	0					0	0.0	0	0	-	-	-	-	0	-	-	-	-	-	-	-	-	-	-
Freezer Exchange	7	7					7	7					2,742	0.5	0.4	3,738	-	-	-	-	392	0.066	0.061	534	-	-	-	-	-	-	-
Total Non-Efficiency Measures	159								866,374												5,449										
Misc Ins./Attic Access/Ven	140								28,628												204										
Duct Sealing	130								19,919												153										
Duct Insulation	103								6,451												63										
Damming Material	63								1,963												31										
Htg. Sys. Tune & Clear	21								2,624												125										
Htg. Sys./WH Other	15								16,070												1,071										
Air Conditioning Work	0								0												0										
Water Heater Repair	4								505												126										
Refrigerator Coil Clean	0								0												0										
Waterbed Mattress Pad	0								0												0										
Programmable Tstat	53								4,985												94										
Unspecified Utility Meas	0								0												0										
CO Detector	155								11,672												75										
Smoke Detector	136								7,069												52										
Fuses	0								0												0										
Htg Sys Safety Check	0								0												0										
Htg Sys Ventilator	122								16,764												137										
Water Heater Ventilation	98								11,676												119										
Bathroom Ventilation	44								9,798																						

Billing Adjusted Costs and Impacts for All Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$365,540

Utility Administration Expenditures: -

Total Labor and Material Expenditures: \$365,540

	Number of Dwellings with Impacts						Number of Dwellings with kWh Impacts						Billing Adjusted First-Year Savings										Average Billing Adjusted First Year Costs and Savings per Dwelling Receiving Measures									
													Spending on Materials & Labor (\$)	Electricity			Gas		Propane	Fuel Oil	Other	Spending on Materials & Labor (\$)	Electricity			Gas		Propane	Fuel Oil	Other		
Measure	Total	Electric	Gas	Propane	Fuel Oil	Other	Cooling	Heating				kW	Summer kWh	kWh	Winter kWh	Annual kWh	Pk-Day therms	Annual therms	gallons	gallons	Mbtu		Summer kW	kWh	kWh	Winter kWh	Annual kWh	Pk-Day therms	Annual therms	gallons	gallons	Mbtu
Total Efficiency Measures	25	25	21	2	0	0	25	25		174,440	7.3	6.0	20,028	76	6,928	628	0	0		6,978	0.293	0.239	801	3.62	330	314	-	-				
Total Shell & Htg. Sys. Repl	25	25	21	2	0	0	25	25		137,625	7.0	8,266	5.5	7,986	16,252	72	6,172	622	0	0	5,505	0.280	331	0.221	319	650	3.41	294	311	-	-	
Total Shell Measures	25	25	21	2	0	0	25	25		92,950	7.0	8,266	5.5	7,986	16,252	46	3,990	374	0	0	3,718	0.280	331	0.221	319	650	2.20	190	187	-	-	
Wall Insul.	9	9	8	0	0	0	9	1		16,767	1.6	1,919	1.1	1,608	3,527	10	886	0	0	0	1,863	0.177	213	1.114	1,608	392	1.29	111	-	-	-	
Open Blown Ceiling Insul	24	24	20	2	0	0	24	2		19,730	2.1	2,525	1.4	2,008	4,533	7	564	119	0	0	822	0.087	105	0.695	1,004	189	0.33	28	60	-	-	
Cavity Fill Insul	8	8	7	0	0	0	8	1		4,563	1.0	1,150	1.1	1,608	2,757	9	801	0	0	0	570	0.119	144	1.113	1,608	345	1.33	114	-	-	-	
Sloped Attic Insul	11	11	0	0	0	0	11	0		4,127	0.9	1,095	0.0	0	1,095	6	542	0	0	0	375	0.083	100	0.000	0	100	0.57	49	-	-	-	
Kneewall Insul	9	9	9	0	0	0	9	0		2,727	0.2	299	0.0	0	299	2	167	0	0	0	303	0.028	33	0.000	0	33	0.22	19	-	-	-	
Infltr. Reduction	24	24	20	2	0	0	24	2		28,893	0.4	540	0.3	493	1,033	6	518	81	0	0	1,204	0.019	22	0.171	247	43	0.30	26	41	-	-	
Found./Crawl. Insul	17	10	14	2	0	0	10	1		7,319	0.8	937	0.2	246	1,183	4	305	139	0	0	431	0.078	94	0.170	246	118	0.25	22	69	-	-	
Bandjoist Insul.	12	1	9	2	0	0	-	1		1,192	0.0	0	0.0	51	51	3	297	46	0	0	99	0.000	0	0.036	51	51	0.38	33	23	-	-	
Furnace Blower Fan¹	23	23	21	2	0	0	-	23		0	0.0	0	1.5	2,172	2,172	(0)	(18)	(2)	0	0	0	0.000	0	0.065	94	94	(0.01)	(1)	(1)	-	-	
Exhaust Ventilator²	9	9	8	1	0	0	9	9		7,632	0.0	(200)	(0.1)	(200)	(399)	(1)	(72)	(10)	0	0	848	-0.003	(22)	(0.015)	(22)	(44)	(0.11)	(9)	(10)	-	-	
Total Heating System Repl	12	0	11	1	0	0	-	0		44,675	0.0	0	0.0	0	0	25	2,182	248	0	0	3,723	-	-	-	-	-	2.30	198	248	-	-	
Condensing Htg Sys Rep	12	0	11	1	0	0	-	-		44,675	0.0	0	0.0	0	0	25	2,182	248	0	0	3,723	-	-	-	-	-	2.30	198	248	-	-	
Non-Cond Htg Sys Repl	0	0	0	0	0	0	-	-		0	0.0	0	0.0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	
Electric Htg Sys Repl	0	0	0	0	0	0	-	0		0	0.0	0	0.0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	
Heat Pump Repl	0	0	0	0	0	0	-	0		0	0.0	0	0.0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	
Other Htg Sys Repl	0	0	0	0	0	0	-	0		0	0.0	0	0.0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	
	Total	Electric	Gas	Propane	Fuel Oil	Other	Total	Electric	Gas	Propane	Fuel Oil	Other		Summer kW	Winter kW	Annual kWh	Pk-Day therms	Annual therms	Propane gallons	Fuel Oil gallons	Other Mbtu		Summer kW	Winter kW	Annual kWh	Pk-Day therms	Annual therms	Propane gallons	Fuel Oil gallons	Other Mbtu		
Water Heating	24	8	15	1	0	0	44	15	28	1	0	0	32,160	0.0	0.0	925	4.3	756	6	0	0	1,340	0.000	0.002	116	0.288	50	6	-	-		
Temp. Reduct.	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	
WH Wrap	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	
Pipe Insul.	18	6	11	1	0	0	18	6	11	1	0	0	350	0.0	0.0	255	0.2	56	6	0	0	19	0.000	0.000	43	0.01	5	6	-	-	-	
LF Showerhead	3	0	3	0	0	0	3	0	3	0	0	0	30	0.0	0.0	0	0.1	37	0	0	0	10	-	-	-	0.04	12	-	-	-	-	
Faucet Aerator	5	2	3	0	0	0	8	5	3	0	0	0	30	0.0	0.0	161	0.0	7	0	0	0	6	0.000	0.002	80	0.01	2	-	-	-	-	
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	
Ht-Eff or Electric Wtr Htr Repl.	15	4	11	0	0	0	15	4	11	0	0	0	31,750	0.0	0.0	509	4.0	656	0	0	0	2,117	0.000	0.003	127	0.37	60	-	-	-	-	
Lighting	17	17					96	96					672	0.1	0.3	1,347	-	-	-	-	-	40	0.008	0.015	79	-	-	-	-	-	-	
Refrigerator/Freezer³	3	3					3	3					3,983	0.2	0.2	1,504	-	-	-	-	-	1,328	0.062	0.058	501	-	-	-	-	-	-	
Refrigerator Removal	0	0					0	0					0	0.0	0.0	0	-	-	-	-	-	0	-	-	-	-	-	-	-	-	-	
Refrigerator Exchange	3	3					3	3					3,983	0.2	0.2	1,504	-	-	-	-	-	1,328	0.062	0.058	501	-	-	-	-	-	-	
Freezer Removal	0	0					0	0					0	0.0	0.0	0	-	-	-	-	-	0	-	-	-	-	-	-	-	-	-	
Freezer Exchange	0	0					0	0					0	0.0	0.0	0	-	-	-	-	-	0	-	-	-	-	-	-	-	-	-	
Total Non-Efficiency Measures	25												191,100									7,644										
Misc Ins Attic Access/Ven	24												7,544									314										
Duct Sealing	1												850									850										
Duct Insulation	0												0									0										
Damming Material	14												780									56										
Htg. Sys. Tune & Clean	3												1,935									645										
Htg. Sys./WH Other	7												4,775									682										
Air Conditioning Work	0												0									0										
Water Heater Repair	0												0									0										
Refrigerator Coil Clean	0												0									0										
Waterbed Mattress Pad	0												0									0										
Programmable Tstat	0												0									0										
Unspecified Utility Meas	0												0									0										
CO Detector	21												874									42										
Smoke Detector	13												599									46										
Fuses	0												0									0										
Htg Sys Safety Check	0												0									0										
Htg Sys Ventilator	14												4,550									325										
Water Heater Ventilation	11												2,120									193										
Bathroom Ventilation	2												1,250									625										
Dryer Ventilation	5												865									173										
Kitchen Ventilation	0												0									0										
Other Exhaust Ventilator	1												27									27										
Asbestos Removal (Minor)	0												0									0										
Health/Safety Repairs	20												25,703									1,285										
Health/Safety Other	1												41									41										
Consumables	0												0									0										
General Repairs	24												34,054									1,419										
Meter Refrig (no action)	20												0									0										
Meter Freezer (no action)	13												0									0										
Support	25												100,343							</												

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Billing Adjusted Costs and Impacts for All Measures Installed During Calendar Year 2016

Total Labor and Material Expenditures: \$1,387,241

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

Billing Adjusted Costs and Impacts for All Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$535,116

Utility Administration Expenditures: -

Total Labor and Material Expenditures: \$535,116

	Number of Dwellings with Impacts						Number of Dwellings with kWh Impacts						Spending on Materials & Labor (\$)	Billing Adjusted First-Year Savings								Average Billing Adjusted First Year Costs and Savings																				
														Electricity			Gas						per Dwelling Receiving Measures						Gas													
Measure	Total	Electric	Gas	Propane	Fuel Oil	Other	Season Cooling	Heating				Summer kW	Winter kWh	Annual kWh	Pk-Day therms	Annual therms	Propane gallons	Fuel Oil gallons	Other Mbtu		Spending on Materials & Labor (\$)	Summer kW	Winter kWh	Annual kWh	Pk-Day therms	Annual therms	Propane gallons	Fuel Oil gallons	Other Mbtu		Spending on Materials & Labor (\$)	Summer kW	Winter kWh	Annual kWh	Pk-Day therms	Annual therms	Propane gallons	Fuel Oil gallons	Other Mbtu			
Total Efficiency Measures	43	43	28	9	0	0	43	43			316,831	10.5	11.5	40,890	61	5,852	1,844	0	0		7,368	0.245	0.267	951	2.18	209	205	-	-													
Total Shell & Htg. Sys. Repl	43	43	28	9	0	0	43	43			266,438	9.2	10,480	9.5	14,520	25,000	58	5,260	1,702	0	0	6,196	0.215	244	0.221	338	581	2.06	188	189	-	-										
Total Shell Measures	43	43	28	9	0	0	43	43			153,557	9.2	10,480	9.4	14,397	24,878	28	2,591	877	0	0	3,571	0.215	244	0.219	335	579	1.01	93	97	-	-										
Wall Insul.	20	20	12	5	0	0	20	3			40,345	2.9	3,485	2.9	4,384	7,870	10	896	261	0	0	2,017	0.144	174	0.956	1,461	393	0.82	75	52	-	-										
Open Blown Ceiling Insul	39	39	25	9	0	0	39	5			34,507	3.5	4,269	2.7	4,098	8,367	8	725	226	0	0	885	0.091	109	0.536	820	215	0.32	29	25	-	-										
Cavity Fill Insul	8	7	5	3	0	0	7	0			7,807	0.5	556	0	0	556	3	235	169	0	0	976	0.066	79	0.000	0	79	0.52	47	56	-	-										
Sloped Attic Insul	17	16	12	3	0	0	16	2			7,426	1.2	1,473	1.0	1,469	2,941	4	407	111	0	0	437	0.076	92	0.480	734	184	0.37	34	37	-	-										
Kneewall Insul	11	10	8	3	0	0	10	0			3,273	0.4	434	0.0	0	434	1	135	47	0	0	298	0.036	43	0.000	0	43	0.18	17	16	-	-										
Infltr. Reduction	42	42	27	9	0	0	42	6			25,408	0.7	869	0.5	819	1,688	3	296	88	0	0	605	0.017	21	0.089	136	40	0.12	11	10	-	-										
Found./Crawl. Insul	4	2	2	1	0	0	2	1			2,804	0.1	152	0.2	308	460	0	9	9	0	0	701	0.063	76	0.202	308	230	0.05	5	9	-	-										
Bandjoist Insul.	3	1	1	1	0	0	-	1			948	0.0	0	0.1	112	112	0	4	4	0	0	316	0.000	0	0.073	112	112	0.04	4	4	-	-										
Furnace Blower Fan¹	37	37	28	9	0	0	-	37			0	0.0	0	3.0	4,592	4,592	(0)	(10)	(4)	0	0	0	0.000	0	0.081	124	124	(0.00)	(0)	(0)	-	-										
Exhaust Ventilator²	34	34	23	7	0	0	34	34			31,040	-0.1	(758)	(0.9)	(1,384)	(2,142)	(1)	(106)	(35)	0	0	913	-0.003	(22)	(0.027)	(41)	(63)	(0.05)														

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Total Reported Labor, Materials and Utility Admin Expenditures:	\$1,248,263
Utility Administration Expenditures:	-
Total Labor and Material Expenditures:	\$1,248,263

² Estimates are based upon reduced usage of the furnace due to bell improvements

³ Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

⁴ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed

Dalhoff Associates, LLC

Northeast Iowa Community Action Corporation
Billing Adjusted Costs and Impacts for All Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$690,985

Utility Administration Expenditures: -

Total Labor and Material Expenditures: \$690,985

Measure	Number of Dwellings with Impacts						Number of Dwellings with kWh Impacts						Spending on Materials & Labor (\$)	Billing Adjusted First-Year Savings										Average Billing Adjusted First Year Costs and Savings per Dwelling Receiving Measures														
	Total	Electric	Gas	Propane	Fuel Oil	Other	Season Cooling	Heating						Summer kW	Winter kWh	Annual kWh	Pk-Day therms	Gas Annual therms	Propane gallons	Fuel Oil gallons	Other Mbtu		Spending on Materials & Labor (\$)	Summer kW	Electricity Winter kWh	Annual kWh	Pk-Day therms	Gas Annual therms	Propane gallons	Fuel Oil gallons	Other Mbtu							
Total Efficiency Measures	100	100	73	20	1	0	100	100					416,209	12.5	10.2	40,807	91	8,888	2,337	32	0		4,162	0.125	0.102	408	1.24	122	117	32	-							
Total Shell & Htg. Sys. Repl	100	100	73	20	1	0	98	100					329,579	11.0	11,608	8.0	12,539	24,147	85	7,952	2,242	32	0	3,296	0.112	118	0.080	125	241	1.17	109	112	32	-				
Total Shell Measures	100	100	73	20	1	0	98	100					164,962	11.0	11,608	8.0	12,446	24,054	38	3,550	1,223	32	0	1,650	0.112	118	0.080	124	241	0.52	49	61	32	-				
Wall Insul.	24	21	16	6	0	0	20	2					13,642	2.4	2,861	0.3	523	3,384	10	940	290	0	0	568	0.119	143	0.167	261	161	0.63	59	48	-	-				
Open Blown Ceiling Insul	72	66	52	15	1	0	65	4					34,141	6.7	8,127	2.7	4,159	12,286	12	1,120	541	33	0	474	0.104	125	0.666	1,040	186	0.23	22	36	33	-				
Cavity Fill Insul	5	3	4	1	0	0	3	0					2,497	0.2	238	0.0	0	238	2	155	36	0	0	499	0.066	79	0.000	0	79	0.42	39	36	-	-				
Sloped Attic Insul	0	0	0	0	0	0	0	0					0	0.0	0	0.0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-				
Kneewall Insul	18	15	13	5	0	0	15	0					11,567	0.7	838	0.0	0	838	2	152	147	0	0	643	0.046	56	0.000	0	56	0.13	12	29	-	-				
Infil. Reduction	88	79	63	18	1	0	78	6					32,670	1.1	1,277	1.5	2,370	3,648	10	965	199	1	0	371	0.014	16	0.253	395	46	0.16	15	11	-	1	-			
Found/Crawl. Insul	16	4	14	1	0	0	3	1					9,584	0.1	180	0.3	528	709	2	212	6	0	0	599	0.050	60	0.339	528	177	0.16	15	6	-	-				
Bandjoist Insul.	68	3	50	15	0	0	-	3					25,888	0.0	0	0.3	469	469	3	254	77	0	0	381	0.000	0	0.100	156	156	0.05	5	5	-	-				
Furnace Blower Fan ¹	93	90	72	20	1	0	-	90					0	0.0	0	4.5	7,092	7,092	(0)	(16)	(6)	(0)	0	0	0.000	0	0.050	79	79	(0.00)	(0)	(0)	(0)	-	-			
Exhaust Ventilator ²	86	86	63	17	1	0	86	86					34,973	-0.2	(1,912)	(1.7)	(2,695)	(4,607)	(2)	(231)	(68)	(3)	0	407	-0.003	(22)	(0.020)	(31)	(54)	(0.04)	(4)	(4)	(3)	-	-			
Total Heating System Repl	63	1	51	11	0	0	-	1					164,617	0.0	0	0.1	92	92	47	4,402	1,019	0	0	2,613	0.000	0	0.059	92	92	0.93	86	93	-	-				
Condensing Htg Sys Repl	61	0	50	11	0	0	-	-					159,171	0.0	0	0.0	0	0	46	4,320	1,019	0	0	2,609	-	-	-	-	-	0.93	86	93	-	-				
Non-Cond Htg Sys Repl	1	0	1	0	0	0	-	-					1,947	0.0	0	0.0	0	0	1	82	0	0	0	1,947	-	-	-	-	-	0.88	82	-	-	-	-			
Electric Htg Sys Repl	1	1	0	0	0	0	-	1					3,499	0.0	0	0.1	92	92	0	0	0	0	3,499	0.000	0	0.059	92	92	-	-	-	-	-	-	-	-		
Heat Pump Repl	0	0	0	0	0	0	-	0					0	0.0	0	0.0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-		
Other Htg Sys Repl	0	0	0	0	0	0	-	0					0	0.0	0	0.0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-		
Measure	Number of Dwellings with Impacts						Number of Dwellings with kWh Impacts						Spending on Materials & Labor (\$)	Billing Adjusted First-Year Savings										Spending on Materials & Labor (\$)	Average Billing Adjusted First Year Costs and Savings per Dwelling Receiving Measures													
	Total	Electric	Gas	Propane	Fuel Oil	Other	Season Cooling	Heating						Summer kW	Winter kWh	Annual kWh	Pk-Day therms	Gas Annual therms	Propane gallons	Fuel Oil gallons	Other Mbtu	Spending on Materials & Labor (\$)	Summer kW	Electricity Winter kWh	Annual kWh	Pk-Day therms	Gas Annual therms	Propane gallons	Fuel Oil gallons	Other Mbtu								
Water Heating	95	39	50	6	0	0	142	49	85	8	0	0	75,164	0.0	0.0	3,080	5.4	936	94	0	0		791	0.000	0.001	79	0.108	19	16	-	-	-	-	-				
Temp. Reduct.	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-			
WH Wrap	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-			
Pipe Insul.	89	37	47	5	0	0	89	37	47	5	0	0	709	0.0	0.0	1,560	0.3	97	11	0	0	0	8	0.000	0.000	42	0.01	2	2	-	-	-	-	-	-			
LF Showerhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-			
Faucet Aerator	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-			
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-			
Hi-Eff or Electric Wtr Htr Repl.	53	12	38	3	0	0	53	12	38	3	0	0	74,455	0.0	0.0	1,521	5.1	839	83	0	0	0	1,405	0.000	0.003	127	0.14	22	28	-	-	-	-	-	-			
Lighting	61	61					402	402					1,126	0.7	1.4	6,963	-	-	-	-	-	0	18	0.012	0.022	114	-	-	-	-	-	-	-	-	-	-		
Refrigerator/Freezer ³	12	12					13	13					10,340	0.8	0.8	6,616	-	-	-	-	-	0	862	0.068	0.063	551	-	-	-	-	-	-	-	-	-	-		
Refrigerator Removal	0	0					0	0					0	0.0	0.0	0	-	-	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-			
Refrigerator Exchange	10	10					10	10					8,692	0.6	0.6	5,014	-	-	-	-	-	0	869	0.062	0.058	501	-	-	-	-	-	-	-	-	-	-		
Freezer Removal	1	1					1	1					40	0.1	0.1	534	-	-	-	-	-	0	40	0.066	0.061	534	-	-	-	-	-	-	-	-	-	-		
Freezer Exchange	2	2					2	2					1,608	0.1	0.1	1,068	-	-	-	-	-	0	804	0.066	0.061	534	-	-	-	-	-	-	-	-	-	-		
Total Non-Efficiency Measures	100												274,776										2,748															
Misc Ins. Attic Access/Ven	33												2,825										86															
Duct Sealing	1												94										94															
Duct Insulation	1												62										62															
Damming Material	1												46										46															
Htg. Sys. Tune & Clear	6												779										130															
Htg. Sys./WH Other	11												5,557										505															
Air Conditioning Work	0												0										0															
Water Heater Repair	9												343										38															
Refrigerator Coil Clean	0												0										0															
Waterbed Mattress Pad	0												0										0															
Programmable Tstat	0																																					

Total Reported Labor, Materials and Utility Admin Expenditures:	\$658,824
Utility Administration Expenditures:	-
Total Labor and Material Expenditures:	\$658,824

² Estimates are based upon reduced usage of the furnace due to shell improvements

³ Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

⁴ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Dalhoff Associates, LLC

Billing Adjusted Costs and Impacts for All Measures Installed During Calendar Year 2016

Total Labor and Material Expenditures: \$1,151,326

² Estimates are based upon reduced usage of the furnace due to shell improvements

³ Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

⁴ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed

Dalhoff Associates, LLC

IMPACT

Billing Adjusted Costs and Impacts for All Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$607,933

Utility Administration Expenditures: -

Total Labor and Material Expenditures: \$607,933

	Number of Dwellings with Impacts						Number of Dwellings with kWh Impacts						Billing Adjusted First-Year Savings										Average Billing Adjusted First Year Costs and Savings per Dwelling Receiving Measures															
Measure	Fuel						Season						Spending on Materials & Labor (\$)	Electricity						Gas						Spending on Materials & Labor (\$)	Electricity						Gas					
	Total	Electric	Gas	Propane	Oil	Other	Cooling	Heating				Summer kW		Winter kWh	Annual kWh	Pk-Day therms	Annual therms	Propane gallons	Fuel Oil gallons	Other Mbtu	Summer kW	Winter kWh	Annual kWh	Pk-Day therms	Annual therms		Propane gallons	Fuel Oil gallons	Other Mbtu									
Total Efficiency Measures	35	35	30	3	0	0	35	35			315,886	6.6		4.5		19,378	110	10,893	1,119	0	0	9,025	0.188	0.128	554	3.67	363	373	-	-								
Total Shell & Htg. Sys. Repl	35	35	30	3	0	0	35	35			253,886	5.8	6,501	3.4	5,345	11,846	102	9,480	1,119	0	0	7,254	0.166	186	0.098	153	338	3.39	316	373	-	-						
Total Shell Measures	35	35	30	3	0	0	35	35			160,187	5.8	6,501	3.4	5,254	11,756	61	5,673	520	0	0	4,577	0.166	186	0.096	150	336	2.03	189	173	-	-						
Wall Insul.	13	13	12	1	0	0	13	0			23,284	1.5	1,850	0.0	0	1,850	16	1,479	32	0	0	1,791	0.118	142	0.000	0	142	1.32	123	32	-	-						
Open Blown Ceiling Insul	30	30	26	3	0	0	30	1			22,207	2.0	2,373	0.4	676	3,050	10	976	117	0	0	740	0.066	79	0.433	676	102	0.40	38	39	-	-						
Cavity Fill Insul	13	13	13	0	0	0	13	0			7,346	0.7	800	0.0	0	800	7	631	0	0	0	565	0.051	62	0.000	0	62	0.52	49	-	-	-						
Sloped Attic Insul	9	9	7	2	0	0	9	0			3,937	0.5	625	0.0	0	625	5	431	191	0	0	437	0.058	69	0.000	0	69	0.66	62	95	-	-						
Kneewall Insul	12	12	11	1	0	0	12	0			3,975	0.3	414	0.0	0	414	4	413	11	0	0	331	0.029	35	0.000	0	35	0.40	38	11	-	-						
Infil. Reduction	35	35	30	3	0	0	35	2			53,396	0.5	544	0.8	1,300	1,844	16	1,461	185	0	0	1,526	0.013	16	0.416	650	53	0.52	49	62	-	-						
Found./Crawl. Insul	14	8	13	0	0	0	8	1			14,699	0.4	494	0.2	254	749	3	326	0	0	0	1,050	0.051	62	0.163	254	94	0.27	25	-	-	-						
Bandjoist Insul.	20	1	18	1	0	0	-	1			3,808	0.0	0	0.1	101	101	2	150	12	0	0	190	0.000	0	0.065	101	101	0.09	8	12	-	-						
Furnace Blower Fan¹	33	32	30	3	0	0	-	32			0	0.0	0	2.4	3,678	3,678	(0)	(22)	(2)	0	0	0	0.000	0	0.074	115	115	(0.01)	(1)	(1)	-	-						
Exhaust Ventilator²	27	27	23	3	0	0	27	27			27,535	-0.1	(600)	(0.5)	(756)	(1,356)	(2)	(171)	(25)	0	0	1,020	-0.003	(22)	(0.018)	(28)	(50)	(0.08)	(7)	(8)	-	-						
Total Heating System Repl	27	1	23	3	0	0	-	1			93,700	0.0	0	0.1	91	91	41	3,807	599	0	0	3,470	0.000	0	0.058	91	91	1.78	166	200	-	-						
Condensing Htg Sys Rep	26	0	23	3	0	0	-	-			91,100	0.0	0	0.0	0	0	41	3,807	599	0	0	3,504	-	-	-	-	-	1.78	166	200	-	-						
Non-Cond Htg Sys Repl	0	0	0	0	0	0	-	-			0	0.0	0	0.0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-						
Electric Htg Sys Repl	1	1	0	0	0	0	-	1			2,600	0.0	0	0.1	91	91	0	0	0	0	0	2,600	0.000	0	0.058	91	91	-	-	-	-	-						
Heat Pump Repl	0	0	0	0	0	0	-	0			0	0.0	0	0.0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-						
Other Htg Sys Repl	0	0	0	0	0	0	-	0			0	0.0	0	0.0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-						
	Total	Electric	Gas	Propane	Fuel Oil	Other	Total	Electric	Gas	Propane	Fuel Oil	Other		Summer kW	Winter kW	Annual kWh	Pk-Day therms	Annual therms	Propane gallons	Fuel Oil gallons	Other Mbtu		Summer kW	Winter kW	Annual kWh	Pk-Day therms	Annual therms	Propane gallons	Fuel Oil gallons	Other Mbtu								
Water Heating	34	6	28	0	0	0	63	11	52	0	0	0	55,441	0.0	0.0	888	8.3	1,413	0	0	0	1,631	0.000	0.003	148	0.296	50	-	-	-	-	-	-					
Temp. Reduct.	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-						
WH Wrap	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-						
Pipe Insul.	34	6	28	0	0	0	34	6	28	0	0	0	340	0.0	0.0	253	0.3	117	0	0	0	10	0.000	0.000	42	0.01	4	-	-	-	-	-	-					
LF Showerhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-						
Faucet Aerator	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-						
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-						
Hi-Eff or Electric Wtr Htr Repl.	29	5	24	0	0	0	29	5	24	0	0	0	55,101	0.0	0.0	635	7.9	1,296	0	0	0	1,900	0.000	0.003	127	0.33	54	-	-	-	-	-	-					
Lighting	32	32					265	265					1,947	0.4	0.7	3,602	-	-	-	-	-	61	0.012	0.022	113	-	-	-	-	-	-	-	-					
Refrigerator/Freezer³	6	6					6	6					4,612	0.4	0.3	3,041	-	-	-	-	-	769	0.062	0.058	507	-	-	-	-	-	-	-	-					
Refrigerator Removal	0	0					0	0					0	0.0	0.0	0	-	-	-	-	-	0	-	-	-	-	-	-	-	-	-	-						
Refrigerator Exchange	5	5					5	5					4,073	0.3	0.3	2,507	-	-	-	-	-	815	0.062	0.058	501	-	-	-	-	-	-	-	-					
Freezer Removal	0	0					0	0					0	0.0	0.0	0	-	-	-	-	-	0	-	-	-	-	-	-	-	-	-	-						
Freezer Exchange	1	1					1	1					539	0.1	0.1	534	-	-	-	-	-	539	0.066	0.061	534	-	-	-	-	-	-	-	-					
Total Non-Efficiency Measures	35												292,047										8,344															
Misc Ins./Attic Access/Vent	34												15,028																									
Duct Sealing	1												300																									
Duct Insulation	23												1,875																									
Damming Material	18												1,186																									
Htg. Sys. Tune & Clear	10												4,309																									
Htg. Sys./WH Other	11												3,712																									
Air Conditioning Work	1												175																									
Water Heater Repair	2												864																									
Refrigerator Coil Clean	0												0																									
Waterbed Mattress Pad	0												0																									
Programmable Tstat	0												0																									
Unspecified Utility Meas	0												0																									
CO Detector	34												806																									
Smoke Detector	31												791																									
Fuses	0												0																									
Htg Sys Safety Check	0												0																									
Htg Sys Ventilator	28												9,556																									
Water Heater Ventilation	23												5,708																									

Billing Adjusted Costs and Impacts for All Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$432,515

Utility Administration Expenditures: -

Total Labor and Material Expenditures: \$432,515

	Number of Dwellings with Impacts						Number of Dwellings with kWh Impacts						Spending on Materials & Labor (\$)	Billing Adjusted First-Year Savings							Average Billing Adjusted First Year Costs and Savings																	
														Electricity			Gas		Propane	Fuel Oil	Other		per Dwelling Receiving Measures					Gas		Propane	Fuel Oil	Other						
Measure	Total	Electric	Gas	Propane	Fuel Oil	Other	Cooling	Heating				Summer kWh	Winter kWh	Annual kWh	Pk-Day therms	Annual therms	gallons	gallons	Mbtu		Summer kWh	Winter kWh	Annual kWh	Pk-Day therms	Annual therms	gallons	gallons	Mbtu		Summer kWh	Winter kWh	Annual kWh	Pk-Day therms	Annual therms	gallons	gallons	Mbtu	
Total Efficiency Measures	29	29	22	3	0	0	29	29			233,384	5.8	7.4	23,210	55	5,067	417	0	0		8,048	0.199	0.255	800	2.51	230	139	-	-									
Total Shell & Htg. Sys. Repl	29	29	22	3	0	0	29	29			198,155	5.1	5,771	6.6	9,665	15,436	53	4,671	409	0	0	6,833	0.175	199	0.226	333	532	2.41	212	136	-	-						
Total Shell Measures	29	29	22	3	0	0	29	29			106,070	5.1	5,771	6.4	9,413	15,184	24	2,143	229	0	0	3,658	0.175	199	0.220	325	524	1.11	97	76	-	-						
Wall Insul.	14	13	10	1	0	0	12	3			13,748	1.8	2,167	0.5	707	2,874	6	523	3	0	0	982	0.150	181	0.160	236	221	0.59	52	3	-	-						
Open Blown Ceiling Insul	19	19	14	1	0	0	18	4			19,771	2.1	2,504	3.7	5,463	7,967	11	930	79	0	0	1,041	0.115	139	0.926	1,366	419	0.75	66	79	-	-						
Cavity Fill Insul	2	2	1	1	0	0	2	0			1,173	0.1	131	0.0	0	131	0	13	30	0	0	587	0.054	65	0.000	0	65	0.15	13	30	-	-						
Sloped Attic Insul	8	7	7	0	0	0	7	1			3,867	0.5	544	0.3	422	966	3	237	0	0	0	483	0.064	78	0.286	422	138	0.39	34	-	-							
Kneewall Insul	5	5	3	0	0	0	4	2			1,629	0.0	33	0.1	112	145	0	6	0	0	0	326	0.007	8	0.038	56	29	0.02	2	-	-							
Infltr. Reduction	28	27	21	3	0	0	26	4			33,256	0.4	502	0.3	383	886	5	408	66	0	0	1,188	0.016	19	0.065	96	33	0.22	19	22	-	-						
Found./Crawl. Insul	8	4	6	1	0	0	4	1			4,866	0.3	316	0.3	470	786	1	53	59	0	0	608	0.065	79	0.319	470	196	0.10	9	59	-	-						
Bandjoist Insul.	17	3	13	1	0	0	-	3			2,860	0.0	0	0.2	227	227	1	48	5	0	0	168	0.000	0	0.051	76	76	0.04	4	5	-	-						
Furnace Blower Fan¹	25	25	22	3	0	0	-	25			0	0.0	0	1.8	2,680	2,680	(0)	(8)	(1)	0	0	0	0.000	0	0.073	107	107	(0.00)	(0)	(0)	-	-						
Exhaust Ventilator²	19	19	13	2	0	0	19	19			24,898	-0.1	(425)	(0.7)	(1,051)	(1,476)	(1)	(68)	(11)	0	0	1,310	-0.003	(22)	(0.038)	(55)	(78)	(0.06)	(5)	(6)	-	-						
Total Heating System Repl	19	2	15	2	0	0	-	2			92,085	0.0	0	0.2	252	252	29	2,528	181	0	0	4,847	0.000	0	0.085	126	126	1.92	169	90	-	-						
Condensing Htg Sys Rep	16	0	15	1	0	0	-	-			63,910	0.0	0	0.0	0	0	23	2,063	83	0	0	3,994	-	-	-	-	-	1.56	138	83	-	-						
Non-Cond Htg Sys Repl	3	0	2	1	0	0	-	-			16,800	0.0	0	0.0	0	0	5	465	97	0	0	5,600	-	-	-	-	-	2.64	233	97	-	-						
Electric Htg Sys Repl	1	1	0	0	0	0	-	1			1,500	0.0	0	0.1	132	132	0	0	0	0	0	1,500	0.000	0	0.089	132	132	-	-	-	-	-						
Heat Pump Repl	1	1	0	0	0	0	-	1			9,875	0.0	0	0.1	120	120	0	0	0	0	0	9,875	0.000	0	0.082	120	120	-	-	-	-	-						
Other Htg Sys Repl	0	0	0	0	0	0	-	0			0	0.0	0	0.0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-							
	Total	Electric	Gas	Propane	Fuel Oil	Other	Total	Electric	Gas	Propane	Fuel Oil	Other		Summer kWh	Winter kWh	Annual kWh	Pk-Day therms	Annual therms	Propane gallons	Fuel Oil gallons	Other Mbtu		Summer kWh	Winter kWh	Annual kWh	Pk-Day therms	Annual therms	Propane gallons	Fuel Oil gallons	Other Mbtu								
Water Heating	27	11	15	1	0	0	59	28	30	1	0	0	0	28,620	0.0	0.0	1,921	2.2	396	8	0	0	1,060	0.000	0.003	175	0.149	26	8	-	-							
Temp. Reduct.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	0	0	-	-	-	-	-	-	-	-	-							
WH Wrap	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	0	0	-	-	-	-	-	-	-	-	-							
Pipe Insul.	19	11	8	0	0	0	19	11	8	0	0	0	0	62	0.0	0.0	467	0.1	24	0	0	0	3	0.000	0.000	42	0.01	3	-	-	-							
LF Showerhead	12	6	5	1	0	0	14	7	6	1	0	0	0	125	0.0	0.0	1,036	0.1	36	8	0	0	10	0.000	0.004	173	0.02	7	8	-	-							
Faucet Aerator	10	5	5	0	0	0	14	9	5	0	0	0	0	33	0.0	0.0	292	0.0	7	0	0	0	3	0.000	0.001	58	0.00	1	-	-	-							
Hot-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-							
Hi-Eff or Electric Wtr Htr Repl.	12	1	11	0	0	0	12	1	11	0	0	0	0	28,400	0.0	0.0	126	2.0	330	0	0	0	2,367	0.000	0.003	126	0.18	30	-	-	-							
Lighting	14	14					127	127					415	0.2	0.3	1,724	-	-	-	-	-	30	0.013	0.024	123	-	-	-	-	-	-							
Refrigerator/Freezer³	6	6					8	8					6,195	0.5	0.5	4,129	-	-	-	-	-	1,033	0.085	0.079	688	-	-	-	-	-	-							
Refrigerator Removal	1	1					1	1					100	0.1	0.1	501	-	-	-	-	-	100	0.062	0.058	501	-	-	-	-	-	-							
Refrigerator Exchange	4	4					4	4					3,630	0.2	0.2	2,026	-	-	-	-	-	908	0.062	0.058	506	-	-	-	-	-	-							
Freezer Removal	0	0					0	0					0	0.0	0.0	0	-	-	-	-	-	0	-	-	-	-	-	-	-	-								
Freezer Exchange	3	3					3	3					2,465	0.2	0.2	1,602	-	-	-	-	-	822	0.066	0.061	534	-	-	-	-	-	-							
Total Non-Efficiency Measures	29												199,131									6,867																
Misc Ins Attic Access/Ven	27												13,184																									
Duct Sealing	5												2,121																									
Duct Insulation	4												587																									
Damming Material	21												1,253																									
Htg. Sys. Tune & Clean	8												1,243																									
Htg. Sys./WH Other	6												3,682																									
Air Conditioning Work	1												100																									
Water Heater Repair	1												100																									
Refrigerator Coil Clean	0												0																									
Waterbed Mattress Pad	0												0																									
Programmable Tstat	0												0																									
Unspecified Utility Meas	0												0																									
CO Detector	25												690																									
Smoke Detector	21												825																									
Fuses	0												0																									
Htg Sys Safety Check	0												0																									
Htg Sys Ventilator	16												7,050																									
Water Heater Ventilation	11												2,125																									
Bathroom Ventilation	6												895																									
Dryer Ventilation	14												1,629																									
Kitchen Ventilation	2												283</																									

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Billing Adjusted Costs and Impacts for All Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$1,038,369

Utility Administration Expenditures: -

Total Labor and Material Expenditures: \$1,038,369

	Number of Dwellings with Impacts						Number of Dwellings with kWh Impacts						Spending on Materials & Labor (\$)	Billing Adjusted First-Year Savings								Average Billing Adjusted First Year Costs and Savings per Dwelling Receiving Measures																						
Measure	Total	Electric	Gas	Propane	Fuel Oil	Other	Season Cooling	Heating			Summer kWh	Electricity kWh	Winter kWh	Annual kWh	Pk-Day therms	Gas Annual therms	Propane gallons	Fuel Oil gallons	Other Mbtu	Spending on Materials & Labor (\$)	Summer kWh	Electricity kWh	Winter kWh	Annual kWh	Pk-Day therms	Gas Annual therms	Propane gallons	Fuel Oil gallons	Other Mbtu															
Total Efficiency Measures	62	62	61	1	0	0	62	62			584,168	21.3	7.4	40,964	245	21,769	545	0	0		9,422	0.343		0.119		661	4.02	357	545	-	-													
Total Shell & Htg. Sys. Repl	62	62	61	1	0	0	62	62			506,243	20.4	24,295	6.2	8,755	33,051					8,165	0.329	392	0.100	141	533	3.81	320	490	-	-													
Total Shell Measures	62	62	61	1	0	0	62	62			345,208	20.4	24,295	6.2	8,755	33,051	139	11,731	275	0	5,568	0.329	392	0.100	141	533	2.28	192	275	-	-													
Wall Insul.	45	45	44	1	0	0	45	0			124,074	7.9	9,538	0.0	0	9,538	55	4,651	93	0	2,757	0.176	212	0.000	0	212	1.26	106	93	-	-													
Open Blown Ceiling Insul	59	59	58	1	0	0	59	0			88,867	7.2	8,733	0.0	0	8,733	36	3,016	148	0	1,506	0.123	148	0.000	0	148	0.62	52	148	-	-													
Cavity Fill Insul	17	16	17	0	0	0	16	0			19,011	1.1	1,373	0.0	0	1,373	9	799	0	0	1,118	0.071	86	0.000	0	86	0.56	47	-	-	-													
Sloped Attic Insul	29	28	29	0	0	0	28	0			14,240	1.6	1,889	0.0	0	1,889	12	1,008	0	0	491	0.056	67	0.000	0	67	0.41	35	-	-	-													
Kneewall Insul	20	20	19	1	0	0	20	0			7,263	0.4	454	0.0	0	454	2	185	8	0	363	0.019	23	0.000	0	23	0.12	10	8	-	-													
Infltr. Reduction	62	62	61	1	0	0	62	0			59,368	1.2	1,437	0.0	0	1,437	18	1,541	14	0	958	0.019	23	0.000	0	23	0.30	25	14	-	-													
Found./Crawl. Insul	33	13	32	1	0	0	13	0			23,924	1.0	1,204	0.0	0	1,204	5	445	14	0	725	0.077	93	0.000	0	93	0.16	14	14	-	-													
Bandjoist Insul.	34	0	34	0	0	0	-	0			4,094	0.0	0	0.0	0	0	2	210	0	0	120	-	-	-	-	-	0.07	6	-	-	-													
Furnace Blower Fan¹	62	62	61	1	0	0	-	62			0	0.0	0	6.4	9,088	9,088	(0)	(35)	(1)	0	0	0.000	0	0.104	147	147	(0.01)	(1)	(1)	-	-													
Exhaust Ventilator²	15	15	15	0	0	0	15	15			4,366	0.0	(333)	(0.2)	(333)	(666)	(1)	(88)	0	0	291	-0.003	(22)	(0.016)	(22)	(44)	(0.07)	(6)	-	-	-													
Total Heating System Repl	54	0	53	1	0	0	-	0			161,034	0.0	0	0.0	0	0	93	7,817	215	0	2,982	-	-	-	-	-	1.75	147	215	-	-													
Condensing Htg Sys Rep	54	0	53	1	0	0	-	-			161,034	0.0	0	0.0	0	0	93	7,817	215	0	2,982	-	-	-	-	-	1.75	147	215	-	-													
Non-Cond Htg Sys Repl	0	0	0	0	0	0	-	0			0	0.0	0	0.0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-													
Electric Htg Sys Repl	0	0	0	0	0	0	-	0			0	0.0	0	0.0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-													
Heat Pump Repl	0	0	0	0	0	0	-	0			0	0.0	0	0.0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-													
Other Htg Sys Repl	0	0	0	0	0	0	-	0			0	0.0	0	0.0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-													
	Total	Electric	Gas	Propane	Fuel Oil	Other	Total	Electric	Gas	Propane	Fuel Oil	Other		Summer kW		Winter kW		Annual kWh		Pk-Day therms		Annual therms		Propane gallons		Fuel Oil gallons		Other Mbtu		Summer kW		Winter kW		Annual kWh		Pk-Day therms		Annual therms		Propane gallons		Fuel Oil gallons		Other Mbtu
Water Heating	61	4	56	1	0	0	106	4	100	2	0	0	0	71,936	0.0		0.0		168	13.1	2,221		55	0	0	0	1,179	0.000		0.000		42	0.234		40		55	-	-					
Temp. Reduct.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0.0		0	0.0	0		0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-					
WH Wrap	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0.0		0	0.0	0		0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-					
Pipe Insul.	54	4	49	1	0	0	54	4	49	1	0	0	0	524	0.0		0.0		168	0.5	160		4	0	0	0	10	0.000		0.000		42	0.01		3		4	-	-					
LF Showerhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0.0		0	0.0	0		0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-						
Faucet Aerator	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0.0		0	0.0	0		0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-						
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0.0		0	0.0	0		0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-						
Hi-Eff or Electric Wtr Htr Repl.	52	0	51	1	0	0	52	0	51	1	0	0	0	71,412	0.0		0.0		0	12.6	2,061		51	0	0	0	1,373	-	-	-	-	0.25		40		51	-	-						
Lighting	33	33					279	279						414	0.4		0.7		3,668	-	-		-	-	-	-	13	0.012		0.022		111	-	-	-	-	-	-	-					
Refrigerator/Freezer³	7	7					8	8						5,575	0.5		0.5		4,077	-	-		-	-	-	-	796	0.072		0.067		582	-	-	-	-	-	-	-					
Refrigerator Removal	0	0					0	0						0	0.0		0.0		0	-	-		-	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-						
Refrigerator Exchange	5	5					6	6						4,385	0.4		0.3		3,009	-	-		-	-	-	-	877	0.074		0.069		602	-	-	-	-	-	-	-					
Freezer Removal	0	0					0	0						0	0.0		0.0		0	-	-		-	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-						
Freezer Exchange	2	2					2	2						1,190	0.1		0.1		1,068	-	-		-	-	-	-	595	0.066		0.061		534	-	-	-	-	-	-	-					
Total Non-Efficiency Measures	62													454,201														7,326																
Misc Ins Attic Access/Ven	55													15,475														281																
Duct Sealing	19													0														0																
Duct Insulation	0													1,084														57																
Damming Material	44													1,735														39																
Htg. Sys. Tune & Clean	8													1,046														131																
Htg. Sys./WH Other	16													12,781														799																
Air Conditioning Work	8													1,040														130																
Water Heater Repair	0													0													0																	
Refrigerator Coil Clean	0													0													0																	
Waterbed Mattress Pad	0													0													0																	
Programmable Tstat	0													0													0																	
Unspecified Utility Meas	0													0													0																	
CO Detector	43													2,042														47																
Smoke Detector	35													882														25																
Fuses	2													127														64																
Htg Sys Safety Check	0													0													0																	
Htg Sys Ventilator	22													6,251														284																
Water Heater Ventilation	2													269														135																
Bathroom Ventilation	26													2,159														83																
Dryer Ventilation	52													2,423														47																
Kitchen Ventilation	8													786														98																
Other Exhaust Ventilator	44													1,214																														

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Total Reported Labor, Materials and Utility Admin Expenditures:	\$1,157,134
Utility Administration Expenditures:	-
Total Labor and Material Expenditures:	\$1,157,134

² Estimates are based upon reduced usage of the furnace due to shell improvements

³ Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

⁴ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Dalhoff Associates, LLC

Upper Des Moines Opportunity Billing Adjusted Costs and Impacts

Total Reported Labor, Materials and Utility Admin Expenditures: \$1,358,161

Utility Administration Expenditures: -

Total Labor and Material Expenditures: \$1,358,161

	Number of Dwellings with Impacts						Number of Dwellings with kWh Impacts						Spending on Materials & Labor (\$)	Billing Adjusted First-Year Savings								Average Billing Adjusted First Year Costs and Savings															
														Electricity				Gas		Propane	Fuel Oil	Other	Spending on Materials & Labor (\$)	per Dwelling Receiving Measures				Gas		Propane	Fuel Oil	Other					
Measure	Total	Electric	Gas	Propane	Fuel Oil	Other	Cooling	Heating				Summer kWh	Winter kWh	Annual kWh	Pk-Day therms	Annual therms	gallons	gallons	Mbtu		Summer kWh	Winter kWh	Annual kWh	Pk-Day therms	Annual therms	gallons	gallons	Mbtu		Summer kWh	Winter kWh	Annual kWh	Pk-Day therms	Annual therms	gallons	gallons	Mbtu
Total Efficiency Measures	107	107	99	6	0	0	107	107			824,688	22.5	11.5	58,136	191	19,423	1,683	0	0		7,707	0.210	0.107	543	1.93	196	280	-	-								
Total Shell & Htg. Sys. Repl	107	106	99	6	0	0	104	106			690,659	20.4	22,871	8.9	14,570	37,441	180	17,545	1,627	0	0	6,455	0.196	220	0.084	137	353	1.82	177	271	-	-					
Total Shell Measures	107	106	99	6	0	0	104	106			467,694	20.4	22,871	8.9	14,447	37,317	110	10,725	1,142	0	0	4,371	0.196	220	0.084	136	352	1.11	108	190	-	-					
Wall Insul.	81	74	76	5	0	0	74	0			159,074	8.7	10,489	0.0	0	10,489	55	5,374	513	0	0	1,964	0.118	142	0.000	0	142	0.73	71	103	-	-					
Open Blown Ceiling Insul	94	86	87	6	0	0	86	1			59,845	6.4	7,742	0.2	282	8,024	16	1,523	266	0	0	637	0.075	90	0.173	282	93	0.18	18	44	-	-					
Cavity Fill Insul	37	30	35	2	0	0	30	0			27,539	1.6	1,955	0.0	0	1,955	15	1,426	43	0	0	744	0.054	65	0.000	0	65	0.42	41	22	-	-					
Sloped Attic Insul	37	30	33	4	0	0	30	0			15,112	1.7	2,030	0.0	0	2,030	10	1,020	141	0	0	408	0.056	68	0.002	0	68	0.32	31	35	-	-					
Kneewall Insul	17	15	15	1	0	0	15	1			4,067	0.3	330	0.0	9	339	1	142	49	0	0	239	0.018	22	0.006	9	23	0.10	9	49	-	-					
Infltr. Reduction	105	95	97	6	0	0	95	2			48,835	1.3	1,623	1.5	2,478	4,102	10	926	88	0	0	465	0.014	17	0.760	1,239	43	0.10	10	15	-	-					
Found./Crawl. Insul	53	13	46	5	0	0	12	2			41,778	0.6	723	0.3	501	1,224	5	478	58	0	0	788	0.050	60	0.154	251	94	0.11	10	12	-	-					
Bandjoist Insul.	70	0	65	5	0	0	-	0			19,674	0.0	0	0.0	0	0	2	236	17	0	0	281	-	-	-	-	0.04	4	3	-	-						
Furnace Blower Fan¹	105	96	99	6	0	0	-	96			0	0.0	0	8.3	13,510	13,510	(0)	(41)	(3)	0	0	0	0.000	0	0.086	141	141	(0.00)	(0)	(1)	-	-					
Exhaust Ventilator²	91	91	83	6	0	0	91	91			91,771	-0.2	(2,021)	(1.4)	(2,334)	(4,354)	(4)	(358)	(28)	0	0	1,008	-0.003	(22)	(0.016)	(26)	(48)	(0.04)	(4)	(5)	-	-					
Total Heating System Repl	83	1	78	4	0	0	-	1			222,964	0.0	0	0.1	124	124	70	6,820	484	0	0	2,686	0.000	0	0.076	124	124	0.90	87	121	-	-					
Condensing Htg Sys Rep	82	0	78	4	0	0	-	-			216,664	0.0	0	0.0	0	0	70	6,820	484	0	0	2,642	-	-	-	-	0.90	87	121	-	-						
Non-Cond Htg Sys Repl	0	0	0	0	0	0	-	-			0	0.0	0	0.0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Electric Htg Sys Repl	0	0	0	0	0	0	-	0			0	0.0	0	0.0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-		
Heat Pump Repl	1	1	0	0	0	0	-	1			6,300	0.0	0	0.1	124	124	0	0	0	0	0	6,300	0.000	0	0.076	124	124	-	-	-	-	-	-	-	-	-	
Other Htg Sys Repl	0	0	0	0	0	0	-	0			0	0.0	0	0.0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-		
	Total	Electric	Gas	Propane	Fuel Oil	Other	Total	Electric	Gas	Propane	Fuel Oil	Other		Summer kWh	Winter kWh	Annual kWh	Pk-Day therms	Annual therms	Propane gallons	Fuel Oil gallons	Other Mbtu		Summer kWh	Winter kWh	Annual kWh	Pk-Day therms	Annual therms	Propane gallons	Fuel Oil gallons	Other Mbtu							
Water Heating	107	31	74	2	0	0	186	42	140	4	0	0	0	107,440	0.0	0.0	2,689	10.9	1,878	56	0	0	1,004	0.000	0.001	87	0.148	25	28	-	-						
Temp. Reduct.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-		
WH Wrap	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-		
Pipe Insul.	107	31	74	2	0	0	107	31	74	2	0	0	0	2,140	0.0	0.0	1,304	0.5	180	5	0	0	20	0.000	0.000	42	0.01	2	3	-	-						
LF Showerhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-		
Faucet Aerator	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-		
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-		
Hi-Eff or Electric Wtr Htr Repl.	79	11	66	2	0	0	79	11	66	2	0	0	0	105,300	0.0	0.0	1,385	10.4	1,698	51	0	0	1,333	0.000	0.003	126	0.16	26	26	-	-						
Lighting	91	91					649	649				0.6	1.0	5,352	-	-	4,579	-	-	-	-	50	0.006	0.011	59	-	-	-	-	-	-	-	-	-	-	-	
Refrigerator/Freezer³	23	23					25	25				1.6	1.5	12,654	-	-	-	-	-	-	-	957	0.068	0.063	550	-	-	-	-	-	-	-	-	-	-	-	-
Refrigerator Removal	0	0					0	0				0.0	0.0	0	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-		
Refrigerator Exchange	22	22					22	22				1.4	1.3	11,052	-	-	-	-	-	-	-	928	0.062	0.058	502	-	-	-	-	-	-	-	-	-	-	-	-
Freezer Removal	0	0					0	0				0.0	0.0	0	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-		
Freezer Exchange	3	3					3	3				0.2	0.2	1,602	-	-	-	-	-	-	-	530	0.066	0.061	534	-	-	-	-	-	-	-	-	-	-	-	
Total Non-Efficiency Measures	107										533,473											4,986															
Misc Ins Attic Access/Ven	102											15,027																								147	
Duct Sealing	0											0																								0	
Duct Insulation	57											4,774																							84		
Damming Material	70											1,911																							27		
Htg. Sys. Tune & Clean	77											20,457																							266		
Htg. Sys./WH Other	21											12,450																							593		
Air Conditioning Work	1											150																							150		
Water Heater Repair	12											634																							53		
Refrigerator Coil Clean	0											0																								0	
Waterbed Mattress Pad	0											0																								0	
Programmable Tstat	0											0																								0	
Unspecified Utility Meas	0											0																								0	
CO Detector	106											9,385																							89		
Smoke Detector	106											6,374																							60		
Fuses	0											0																								0	
Htg Sys Safety Check	0											0																								0	
Htg Sys Ventilator	46											7,512																							163		
Water Heater Ventilation	49											5,847																							119		
Bathroom Ventilation	71											8,535																							120		
Dryer Ventilation	65											5,334																							82		
Kitchen Ventilation	3											354																							118		
Other Exhaust Ventilator	8																																				

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Billing Adjusted Costs and Impacts for All Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$741,488

Utility Administration Expenditures: -

Total Labor and Material Expenditures: \$741,488

	Number of Dwellings with Impacts						Number of Dwellings with kWh Impacts						Billing Adjusted First-Year Savings										Average Billing Adjusted First Year Costs and Savings										
													Spending on Materials & Labor (\$)	Electricity			Gas		Propane	Fuel Oil	Other	Spending on Materials & Labor (\$)	Electricity			Gas		Propane	Fuel Oil	Other			
Measure	Total	Electric	Gas	Propane	Fuel Oil	Other	Cooling	Heating				Summer kWh	Winter kWh	Annual kWh	Pk-Day therms	Annual therms	gallons	gallons	Mbtu		Summer kWh	Winter kWh	Annual kWh	Pk-Day therms	Annual therms	gallons	gallons	Mbtu					
Total Efficiency Measures	57	57	43	10	0	0	57	57			410,419	17.9	11.0	48,886	97	8,897	2,480	0	0		7,200	0.314	0.194	858	2.25	207	248	-	-				
Total Shell & Htg. Sys. Repl	57	57	43	10	0	0	56	57			331,079	16.2	18,547	8.5	12,327	30,874	91	7,839	2,445	0	0	5,808	0.289	331	0.150	216	542	2.12	182	245	-	-	
Total Shell Measures	57	57	43	10	0	0	56	57			172,101	16.2	18,547	8.5	12,255	30,802	38	3,302	1,244	0	0	3,019	0.289	331	0.149	215	540	0.89	77	124	-	-	
Wall Insul.	38	34	29	6	0	0	34	3			45,837	6.2	7,487	1.7	2,527	10,014	17	1,485	355	0	0	1,206	0.183	220	0.583	842	295	0.59	51	59	-	-	
Open Blown Ceiling Insul	52	48	40	8	0	0	48	4			37,982	6.5	7,872	3.4	4,982	12,854	10	881	582	0	0	730	0.136	164	0.862	1,245	268	0.26	22	73	-	-	
Cavity Fill Insul	6	6	4	1	0	0	6	1			3,000	0.5	565	0.1	136	700	1	88	19	0	0	500	0.078	94	0.094	136	117	0.25	22	19	-	-	
Sloped Attic Insul	20	18	14	4	0	0	18	2			7,861	1.5	1,764	0.9	1,254	3,018	5	413	131	0	0	393	0.081	98	0.434	627	168	0.34	30	33	-	-	
Kneewall Insul	12	11	8	3	0	0	11	1			2,691	0.2	244	0.1	184	429	0	35	16	0	0	224	0.018	22	0.128	184	39	0.05	4	5	-	-	
Infltr. Reduction	57	53	43	10	0	0	53	4			32,922	1.2	1,446	0.3	461	1,907	5	462	156	0	0	578	0.023	27	0.080	115	36	0.12	11	16	-	-	
Found./Crawl. Insul	17	4	14	2	0	0	3	1			5,402	0.2	280	0.1	85	365	1	81	11	0	0	318	0.077	93	0.059	85	91	0.07	6	5	-	-	
Bandjoist Insul.	25	1	18	6	0	0	-	1			2,053	0.0	0	0.0	26	26	1	51	21	0	0	82	0.000	0	0.018	26	26	0.03	3	4	-	-	
Furnace Blower Fan¹	53	52	43	10	0	0	-	52			0	0.0	0	2.9	4,182	4,182	(0)	(13)	(5)	0	0	0	0.000	0	0.056	80	80	(0.00)	(0)	(0)	-	-	
Exhaust Ventilator²	50	50	39	8	0	0	50	50			34,352	-0.1	(1,112)	(1.1)	(1,582)	(2,694)	(2)	(181)	(41)	0	0	687	-0.003	(22)	(0.022)	(32)	(54)	(0.05)	(5)	(5)	-	-	
Total Heating System Repl	43	1	34	8	0	0	-	1			158,978	0.0	0	0.1	72	72	53	4,537	1,201	0	0	3,697	0.000	0	0.050	72	72	1.55	133	150	-	-	
Condensing Htg Sys Rep	41	0	34	7	0	0	-	-			139,220	0.0	0	0.0	0	0	53	4,537	1,119	0	0	3,396	-	-	-	-	1.55	133	160	-	-		
Non-Cond Htg Sys Repl	1	0	0	1	0	0	-	-			2,370	0.0	0	0.0	0	0	0	0	0	0	0	2,370	-	-	-	-	-	-	82	-	-		
Electric Htg Sys Repl	1	1	0	0	0	0	-	1			17,388	0.0	0	0.1	72	72	0	0	0	0	0	17,388	0.000	0	0.050	72	72	-	-	-	-		
Heat Pump Repl	0	0	0	0	0	0	-	0			0	0.0	0	0.0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-		
Other Htg Sys Repl	0	0	0	0	0	0	-	0			0	0.0	0	0.0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-		
	Total	Electric	Gas	Propane	Fuel Oil	Other	Total	Electric	Gas	Propane	Fuel Oil	Other		Summer kW	Winter kW	Annual kWh	Pk-Day therms	Annual therms	Propane gallons	Fuel Oil gallons	Other Mbtu		Summer kW	Winter kW	Annual kWh	Pk-Day therms	Annual therms	Propane gallons	Fuel Oil gallons	Other Mbtu			
Water Heating	53	18	33	2	0	0	161	46	109	6	0	0	0	67,033	0.0	0.0	2,646	5.9	1,058	35	0	0	1,265	0.000	0.003	147	0.179	32	17	-	-		
Temp. Reduct.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-		
WH Wrap	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-		
Pipe Insul.	46	16	28	2	0	0	46	16	28	2	0	0	0	890	0.0	0.0	677	0.2	73	6	0	0	19	0.000	0.000	42	0.01	3	3	-	-		
LF Showerhead	14	3	11	0	0	0	14	3	11	0	0	0	0	140	0.0	0.0	521	0.2	70	0	0	0	10	0.000	0.004	174	0.02	6	-	-	-		
Faucet Aerator	43	15	26	2	0	0	66	21	42	3	0	0	0	330	0.0	0.0	683	0.2	52	4	0	0	8	0.000	0.001	46	0.01	2	2	-	-		
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-		
Hi-Eff or Electric Wtr Htr Repl.	35	6	28	1	0	0	35	6	28	1	0	0	0	65,673	0.0	0.0	766	5.3	862	25	0	0	1,876	0.000	0.003	128	0.19	31	25	-	-		
Lighting	43	43					456	456						3,386	0.9	1.7	8,717	-	-	-	-	79	0.021	0.039	203	-	-	-	-	-	-		
Refrigerator/Freezer³	11	11					13	13						8,921	0.8	0.8	6,649	-	-	-	-	811	0.074	0.070	604	-	-	-	-	-	-		
Refrigerator Removal	0	0					0	0					0	0.0	0.0	0	-	-	-	-	-	0	-	-	-	-	-	-	-	-	-		
Refrigerator Exchange	9	9					9	9					7,092	0.6	0.5	4,513	-	-	-	-	788	0.062	0.058	501	-	-	-	-	-	-	-		
Freezer Removal	0	0					0	0					0	0.0	0.0	0	-	-	-	-	-	0	-	-	-	-	-	-	-	-	-		
Freezer Exchange	3	3					4	4					1,829	0.3	0.2	2,136	-	-	-	-	610	0.088	0.082	712	-	-	-	-	-	-	-		
Total Non-Efficiency Measures	57										331,069											5,808											
Misc Ins Attic Access/Ven	56										10,913																					195	
Duct Sealing	49										5,701																					300	
Duct Insulation	38										2,463																					50	
Damming Material	38										1,244																					33	
Htg. Sys. Tune & Clean	17										3,705																					218	
Htg. Sys./WH Other	11										10,548																					959	
Air Conditioning Work	0										0																						0
Water Heater Repair	2										259																						130
Refrigerator Coil Clean	0										0																						0
Waterbed Mattress Pad	0										0																						0
Programmable Tstat	0										0																						0
Unspecified Utility Meas	0										0																						0
CO Detector	37										766																						21
Smoke Detector	17										1,076																						63
Fuses	0										0																						0
Htg Sys Safety Check	0										0																						0
Htg Sys Ventilator	42										11,679																						278
Water Heater Ventilation	28										6,333																						226
Bathroom Ventilation	50										4,758																						95
Dryer Ventilation	28										2,058																						73
Kitchen Ventilation	10										688																						69
Other Exhaust Ventilator	53										1,491																						28
Asbestos Removal (Minor)	0										0																						0
Health/Safety Repairs	42										16,417																						391
Health/Safety Other	3										49																						16
Consumables	0										0																						0
General Repairs	57										28,793																						

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Total Reported Labor, Materials and Utility Admin Expenditures:	\$678,130
Utility Administration Expenditures:	-
Total Labor and Material Expenditures:	\$678,130

² Estimates are based upon reduced usage of the furnace due to shell improvements

³ Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

⁴ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Dalhoff Associates, LLC

Billing Adjusted Costs and Impacts for All Measures Installed During Calendar Year 2016

Total Labor and Material Expenditures: \$2,608,134

² Estimates are based upon reduced usage of the furnace due to shell improvements

³ Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

⁴ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Dalhoff Associates, LLC

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5. DETAILED SPENDING AND IMPACT PROFILES BY AGENCY FOR UTILITY EXPENDITURES

This section provides tables of spending and impacts by agency for utility expenditures.

New Opportunities

Billing Adjusted Costs and Impacts for Utility-Funded Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$242,062

Utility Administration Expenditures: -

Total Labor and Material Expenditures: \$242,062

Measure	Number of Dwellings with Impacts			Number of Dwellings with Electricity Impacts		Spending on Materials & Labor (\$)	Billing Adjusted First-Year Savings						Average Billing Adjusted First Year Costs and Savings per Dwelling Receiving Measures										
	Total	Electric	Gas	Season Cooling	Heating		Summer kW	Electricity			Gas Annual therms	Spending on Materials & Labor (\$)	Summer kW	Electricity			Gas Annual therms						
								kWh	kW	kWh				kW	kWh	kW		kWh	kW				
Total Efficiency Measures	47	41	34	41	41	206,625	8.7	10.2			31,826	66	6,283	4,396	0.212	0.248			776	1.94	185		
Total Shell & Htg. Sys. Repl	45	40	33	34	40	162,340	7.7	9,310	8.8	13,436	22,747	62	5,658	3,608	0.227	274	0.220	336	569	1.88	171		
Total Shell Measures	44	39	33	34	39	90,625	7.7	9,310	8.7	13,284	22,594	37	3,399	2,060	0.227	274	0.223	341	579	1.13	103		
Wall Insul.	20	16	16	16	1	23,963	2.2	2,629	0.1	211	2,840	9	840	1,198	0.136	164	0.138	211	178	0.58	53		
Open Blown Ceiling Insul.	41	35	31	34	6	27,252	2.6	3,106	4.4	6,771	9,877	8	711	665	0.076	91	0.738	1,128	282	0.25	23		
Cavity Fill Insul.	15	11	13	11	2	14,882	0.7	862	1.5	2,345	3,207	8	758	992	0.065	78	0.767	1,173	292	0.64	58		
Sloped Attic Insul.	15	13	11	13	1	7,802	0.9	1,116	0.2	300	1,416	5	425	520	0.071	86	0.196	300	109	0.42	39		
Kneewall Insul.	15	11	12	11	2	4,302	0.4	482	0.1	146	628	3	249	287	0.036	44	0.048	73	57	0.23	21		
Infil. Reduction	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-		
Found./Crawl. Insul.	23	18	17	15	5	9,569	0.9	1,114	1.2	1,829	2,943	2	204	416	0.062	74	0.239	366	164	0.13	12		
Bandjoist Insul.	18	3	15	-	3	2,855	0.0	0	0.1	186	186	2	221	159	0.000	0	0.041	62	62	0.16	15		
Furnace Blower Fan ¹	38	33	33	-	33	0	0.0	0	1.0	1,496	1,496	(0)	(7)	0	0.000	0	0.030	45	45	(0.00)	(0)		
Exhaust Ventilatio ²	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-		
Total Heating System Repl	25	2	23	-	2	71,714	0.0	0	0.1	152	152	25	2,258	2,869	0.000	0	0.050	76	76	1.08	98		
Condensing Htg Sys Repl	23	0	23	-	-	64,714	0.0	0	0.0	0	0	25	2,258	2,814	-	-	-	-	-	1.08	98		
Non-Cond Htg Sys Repl	0	0	0	-	-	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-		
Electric Htg Sys Repl	2	2	0	-	2	7,000	0.0	0	0.1	152	152	0	0	3,500	0.000	0	0.050	76	76	-	-		
Heat Pump Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-		
Other Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-		
	Total	Electric	Gas	Total	Electric	Gas	Summer kW	Winter kW			Annual kWh	Pk-Day therms	Annual therms		Summer kW	Winter kW			Annual kWh	Pk-Day therms	Annual therms		
Water Heating	27	5	22	21	4	17	38,041	0.0	0.0			505	3.8	625	1,409	0.000	0.002			101	0.174	28	
Temp. Reduct.	0	0	0	0	0	0	0	0.0	0.0			0	0.0	0	0	-	-			-	-	-	
WH Wrap	0	0	0	0	0	0	0	0.0	0.0			0	0.0	0	0	-	-			-	-	-	
Pipe Insul.	0	0	0	0	0	0	0	0.0	0.0			0	0.0	0	0	-	-			-	-	-	
LF Showerhead	0	0	0	0	0	0	0	0.0	0.0			0	0.0	0	0	-	-			-	-	-	
Faucet Aerator	0	0	0	0	0	0	0	0.0	0.0			0	0.0	0	0	-	-			-	-	-	
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0.0	0.0			0	0.0	0	0	-	-			-	-	-	
Hi-Eff or Electric Wtr Htr Repl.	27	5	22	21	4	17	38,041	0.0	0.0			505	3.8	625	1,409	0.000	0.002			101	0.17	28	
Lighting	38	38		220	220		976	0.5	0.9			4,727	-	-	26	0.013	0.024			124	-	-	
Refrigerator/Freezer ³	8	8		7	7		5,268	0.5	0.4			3,847	-	-	658	0.059	0.055			481	-	-	
Refrigerator Removal	0	0		0	0		0	0.0	0.0			0	-	-	0	-	-			-	-	-	
Refrigerator Exchange	5	5		4	4		3,710	0.3	0.3			2,245	-	-	742	0.055	0.052			449	-	-	
Freezer Removal	0	0		0	0		0	0.0	0.0			0	-	-	0	-	-			-	-	-	
Freezer Exchange	3	3		3	3		1,558	0.2	0.2			1,602	-	-	519	0.066	0.061			534	-	-	
Total Non-Efficiency Measures	47						35,437									754							
Misc Ins,Attic Access/Vent	0						0									0							
Duct Sealing	0						0									0							
Duct Insulation	0						0									0							
Damming Material	0						0									0							
Htg. Sys. Tune & Clean	7						835									119							
Htg. Sys./WH Other	0						0									0							
Air Conditioning Work	0						0									0							
Water Heater Repair	0						0									0							
Refrigerator Coil Clean	0						0									0							
Waterbed Mattress Pad	0						0									0							
Programmable Tstat	0						0									0							
Unspecified Utility Meas.	0						0									0							
CO Detector	0						0									0							
Smoke Detector	0						0									0							
Fuses	0						0									0							
Htg Sys Safety Check	0						0									0							
Htg Sys Ventilation	21						4,774									227							
Water Heater Ventilation	22						4,336									197							
Bathroom Ventilation	0						0									0							
Dryer Ventilation	0						0									0							
Kitchen Ventilation	0						0									0							
Other Exhaust Ventilation	0						0									0							
Asbestos Removal (Minor)	0						0									0							
Health/Safety Repairs	27						38,041									1,409							
Health/Safety Other	0						0									0							
Consumables	0						0									0							
General Repairs	0						0									0							
Meter Refrig (no action)	0						0									0							
Meter Freezer (no action)	0						0									0							
Support	46						25,492									554							
Transportation Allowance	0						0									0							
Landlord Contr Misc	0						0									0							
Landlord Contr Furnace	0						0									0							
Landlord Contr DHW	0						0									0							
Client Contr (Any)	0						0									0							
Lead Safe Work	0						0									0							
Unspecified/Other	0						0									0							

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

Hawkeye Area Community Action Program
Billing Adjusted Costs and Impacts for Utility-Funded Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$638,145

Utility Administration Expenditures: -

Total Labor and Material Expenditures: \$638,145

Measure	Number of Dwellings with Impacts			Number of Dwellings with Electricity Impacts		Spending on Materials & Labor (\$)	Billing Adjusted First-Year Savings						Average Billing Adjusted First Year Costs and Savings per Dwelling Receiving Measures							
	Total	Electric	Gas	Season Cooling	Heating		Summer kW	Electricity			Gas		Spending on Materials & Labor (\$)	Summer kW	Electricity		Gas			
								kWh	kWh	Annual kWh	Pk-Day therms	Annual therms			kWh	kWh	kWh	Annual kWh	Pk-Day therms	Annual therms
Total Efficiency Measures	126	109	97	104	109	544,200	13.2		7.2	42,338	212	20,638	4,319	0.127		0.066	388	2.18	213	
Total Shell & Htg. Sys. Repl	116	92	94	68	92	429,545	10.7	12,949	4.1	6,270	19,219	197	18,069	3,703	0.158	190	0.044	68	209	
Total Shell Measures	116	92	94	68	92	285,962	10.7	12,949	4.1	6,270	19,219	111	10,238	2,465	0.158	190	0.044	68	209	
Wall Insul.	48	39	37	39	1	105,388	4.4	5,265	0.6	850	6,115	32	2,908	2,196	0.112	135	0.552	850	157	
Open Blown Ceiling Insul.	63	50	48	50	1	50,559	4.3	5,131	0.1	144	5,275	39	3,595	803	0.085	103	0.093	144	105	
Cavity Fill Insul.	14	8	13	8	0	18,670	0.4	487	0.0	0	487	9	864	1,334	0.050	61	0.000	0	61	
Sloped Attic Insul.	19	15	16	15	0	12,124	0.6	722	0.0	0	722	6	575	638	0.040	48	0.000	0	48	
Kneewall Insul.	19	17	17	17	0	7,615	0.4	521	0.0	0	521	4	359	401	0.025	31	0.000	0	31	
Infil. Reduction	13	5	12	5	1	4,753	0.0	42	0.1	140	182	1	136	366	0.007	8	0.091	140	36	
Found./Crawl. Insul.	59	14	54	13	1	78,954	0.6	781	0.3	403	1,184	18	1,656	1,338	0.050	60	0.262	403	85	
Bandjoist Insul.	36	1	35	-	1	7,898	0.0	0	0.1	130	130	2	176	219	0.000	0	0.085	130	130	
Furnace Blower Fan ¹	114	90	94	-	90	0	0.0	0	3.0	4,603	4,603	(0)	(30)	0	0.000	0	0.033	51	51	
Exhaust Ventilatio ²	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	
Total Heating System Repl	63	0	63	-	0	143,583	0.0	0	0.0	0	0	85	7,831	2,279	-	-	-	-	1.35	
Condensing Htg Sys Repl	63	0	63	-	-	143,583	0.0	0	0.0	0	0	85	7,831	2,279	-	-	-	-	1.35	
Non-Cond Htg Sys Repl	0	0	0	-	-	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	
Electric Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	
Heat Pump Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	
Other Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	
	Total	Electric	Gas	Number of Measures by Fuel Type			Summer kW	Winter kW		Annual kWh	Pk-Day therms	Annual therms		Summer kW	Winter kW		Annual kWh	Pk-Day therms	Annual therms	
Water Heating	92	22	70	154	30	123	96,833	0.0	0.0	2,082	15.0	2,569	1,053	0.000		0.001	95	0.215	37	
Temp. Reduct.	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-	
WH Wrap	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-	
Pipe Insul.	87	21	66	87	21	66	1,597	0.0	0.0	883	0.6	219	18	0.000		0.000	42	0.01	3	
LF Showerhead	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-	
Faucet Aerator	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-	
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-	
Hi-Eff or Electric Wtr Htr Repl.	71	10	61	67	9	57	95,235	0.0	0.0	1,199	14.4	2,350	1,341	0.000		0.003	120	0.24	39	
Lighting	85	85		643	643		4,725	0.9	1.6	8,323	-	-	56	0.010		0.019	98	-	-	
Refrigerator/Freezer ³	25	25		25	25		13,098	1.6	1.5	12,714	-	-	524	0.063		0.058	509	-	-	
Refrigerator Removal	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-	-	
Refrigerator Exchange	18	18		18	18		10,616	1.1	1.0	9,015	-	-	590	0.062		0.058	501	-	-	
Freezer Removal	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-	-	
Freezer Exchange	7	7		7	7		2,482	0.5	0.4	3,698	-	-	355	0.065		0.061	528	-	-	
Total Non-Efficiency Measures	126					93,945							746							
Misc Ins,Attic Access/Vent	1					86													86	
Duct Sealing	3					802													267	
Duct Insulation	0					0													0	
Damming Material	0					0													0	
Htg. Sys. Tune & Clean	25					1,972													79	
Htg. Sys./WH Other	0					0													0	
Air Conditioning Work	0					0													0	
Water Heater Repair	0					0													0	
Refrigerator Coil Clean	0					0													0	
Waterbed Mattress Pad	0					0													0	
Programmable Tstat	0					0													0	
Unspecified Utility Meas.	0					0													0	
CO Detector	0					0													0	
Smoke Detector	0					0													0	
Fuses	0					0													0	
Htg Sys Safety Check	0					0													0	
Htg Sys Ventilation	61					9,790													160	
Water Heater Ventilation	53					8,643													163	
Bathroom Ventilation	0					0													0	
Dryer Ventilation	0					0													0	
Kitchen Ventilation	0					0													0	
Other Exhaust Ventilation	0					0													0	
Asbestos Removal (Minor)	0					0													0	
Health/Safety Repairs	71					95,235													1,341	
Health/Safety Other	0					0													0	
Consumables	0					0													0	
General Repairs	16					5,478													342	
Meter Refrig (no action)	13					0													0	
Meter Freezer (no action)	3					0													0	
Support	126					67,173													533	
Transportation Allowance	0					0													0	
Landlord Contr Misc	0					0													0	
Landlord Contr Furnace	0					0													0	
Landlord Contr DHW	0					0													0	
Client Contr (Any)	0					0													0	
Lead Safe Work	0					0													0	
Unspecified/Other	0					0													0	

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Community Action of Eastern Iowa
Billing Adjusted Costs and Impacts for Utility-Funded Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$670,482

Utility Administration Expenditures: -

Total Labor and Material Expenditures: \$670,482

Measure	Number of Dwellings with Impacts			Number of Dwellings with Electricity Impacts		Spending on Materials & Labor (\$)	Billing Adjusted First-Year Savings						Average Billing Adjusted First Year Costs and Savings per Dwelling Receiving Measures								
	Total	Electric	Gas	Season Cooling	Heating		Summer kW	Electricity		Annual kWh	Pk-Day therms	Gas Annual therms	Spending on Materials & Labor (\$)	Summer kW	Electricity		Annual kWh	Pk-Day therms	Gas Annual therms		
								kWh	kWh						kWh	kWh				kWh	kWh
Total Efficiency Measures	98	73	95	73	73	548,551	12.9		7.1	40,364	232	22,725	5,597	0.176		0.097	553	2.44	239		
Total Shell & Htg. Sys. Repl	98	72	95	70	72	433,095	10.7	12,952	4.2	6,444	19,396	215	19,776	4,419	0.153	185	0.058	89	2.26	208	
Total Shell Measures	98	72	95	70	72	229,665	10.7	12,952	4.2	6,444	19,396	121	11,154	2,344	0.153	185	0.058	89	2.26	117	
Wall Insul.	50	40	50	40	0	73,936	4.3	5,224	0.0	0	5,224	43	3,959	1,479	0.108	131	0.000	0	131	0.86	79
Open Blown Ceiling Insul.	66	50	64	50	1	30,429	3.3	4,021	0.2	282	4,303	27	2,446	461	0.067	80	0.183	282	86	0.42	38
Cavity Fill Insul.	25	20	25	20	0	18,800	1.0	1,266	0.0	0	1,266	16	1,465	752	0.052	63	0.000	0	63	0.64	59
Sloped Attic Insul.	23	18	23	18	0	10,083	0.9	1,026	0.0	0	1,026	11	998	438	0.047	57	0.000	0	57	0.47	43
Kneewall Insul.	22	17	22	17	0	13,902	0.3	348	0.0	0	348	4	411	632	0.017	20	0.000	0	20	0.20	19
Infil. Reduction	95	67	92	67	2	39,365	0.6	707	0.1	123	830	13	1,236	414	0.009	11	0.040	61	12	0.15	13
Found./Crawl. Insul.	28	6	28	6	0	16,849	0.3	360	0.0	0	360	4	368	602	0.050	60	0.000	0	60	0.14	13
Bandjoist Insul.	63	0	63	-	0	26,301	0.0	0	0.0	0	0	3	302	417	-	-	-	-	-	0.05	5
Furnace Blower Fan ¹	96	70	95	-	70	0	0.0	0	3.9	6,039	6,039	(0)	(30)	0	0.000	0	0.056	86	86	(0.00)	(0)
Exhaust Ventilatio ²	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Total Heating System Repl	69	0	69	-	0	203,430	0.0	0	0.0	0	0	94	8,622	2,948	-	-	-	-	-	1.36	125
Condensing Htg Sys Repl	69	0	69	-	-	203,430	0.0	0	0.0	0	0	94	8,622	2,948	-	-	-	-	-	1.36	125
Non-Cond Htg Sys Repl	0	0	0	-	-	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Electric Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Heat Pump Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Other Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
	Total	Electric	Gas	Number of Measures by Fuel Type			Summer kW	Winter kW		Annual kWh	Pk-Day therms	Annual therms		Summer kW	Winter kW		Annual kWh	Pk-Day therms	Annual therms		
Water Heating	83	13	70	211	31	181	99,645	0.0	0.0	2,300	16.8	2,950	1,201	0.000		0.003	177	0.240	42		
Temp. Reduct.	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-	-	
WH Wrap	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-	-	
Pipe Insul.	79	11	68	79	11	68	1,550	0.0	0.0	463	0.7	241	20	0.000		0.000	42	0.01	4		
LF Showerhead	16	4	12	16	4	12	160	0.0	0.0	700	0.3	101	10	0.000		0.004	175	0.03	8		
Faucet Aerator	36	8	28	51	9	42	255	0.0	0.0	292	0.2	70	7	0.000		0.001	37	0.01	3		
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-	-	
Hi-Eff or Electric Wtr Htr Repl.	70	7	63	65	7	59	97,680	0.0	0.0	845	15.6	2,538	1,395	0.000		0.003	121	0.25	40		
Lighting	58	58		488	488		3,432	1.0	1.8	9,198	-	-	59	0.017		0.031	159	-	-		
Refrigerator/Freezer ³	17	17		19	19		12,379	1.2	1.1	9,469	-	-	728	0.069		0.064	557	-	-		
Refrigerator Removal	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-	-	-	
Refrigerator Exchange	16	16		16	16		10,889	1.0	0.9	7,905	-	-	681	0.061		0.057	494	-	-	-	
Freezer Removal	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-	-	-	
Freezer Exchange	3	3		3	3		1,490	0.2	0.2	1,564	-	-	497	0.064		0.060	521	-	-	-	
Total Non-Efficiency Measures	97					121,931							1,257								
Misc Ins,Attic Access/Vent	56					5,357														96	
Duct Sealing	6					1,035														173	
Duct Insulation	0					0														0	
Damming Material	0					0														0	
Htg. Sys. Tune & Clean	20					2,499														125	
Htg. Sys./WH Other	0					0														0	
Air Conditioning Work	0					0														0	
Water Heater Repair	0					0														0	
Refrigerator Coil Clean	0					0														0	
Waterbed Mattress Pad	0					0														0	
Programmable Tstat	52					4,885														94	
Unspecified Utility Meas.	0					0														0	
CO Detector	0					0														0	
Smoke Detector	0					0														0	
Fuses	0					0														0	
Htg Sys Safety Check	0					0														0	
Htg Sys Ventilation	69					9,484														137	
Water Heater Ventilation	56					6,586														118	
Bathroom Ventilation	0					0														0	
Dryer Ventilation	0					0														0	
Kitchen Ventilation	0					0														0	
Other Exhaust Ventilation	0					0														0	
Asbestos Removal (Minor)	0					0														0	
Health/Safety Repairs	31					1,639														53	
Health/Safety Other	0					0														0	
Consumables	0					0														0	
General Repairs	87					18,576														214	
Meter Refrig (no action)	53					0														0	
Meter Freezer (no action)	20					0														0	
Support	97					71,870														741	
Transportation Allowance	0					0														0	
Landlord Contr Misc	0					0														0	
Landlord Contr Furnace	0					0														0	
Landlord Contr DHW	0					0														0	
Client Contr (Any)	0					0														0	
Lead Safe Work	0					0														0	
Unspecified/Other	0					0														0	

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

MATURA Action Corporation
Billing Adjusted Costs and Impacts for Utility-Funded Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$106,222

Utility Administration Expenditures: -

Total Labor and Material Expenditures: \$106,222

Measure	Number of Dwellings with Impacts			Number of Dwellings with Electricity Impacts Season		Spending on Materials & Labor (\$)	Billing Adjusted First-Year Savings						Average Billing Adjusted First Year Costs and Savings per Dwelling Receiving Measures						
	Total	Electric	Gas	Cooling	Heating		Electricity		Annual kWh	Pk-Day therms	Gas Annual therms	Spending on Materials & Labor (\$)	Electricity		Annual kWh	Pk-Day therms	Gas Annual therms		
							Summer kW	Winter kWh					Summer kW	Winter kWh					
Total Efficiency Measures	18	11	17	11	11	84,457	2.7	3.3	8,864	53	4,805	4,692	0.248	0.300	806	3.12	283		
Total Shell & Htg. Sys. Repl	18	11	17	10	11	67,280	2.7	3.201	3.2	4,570	7,770	3,738	0.265	0.288	415	706	2.97	256	
Total Shell Measures	18	11	17	10	11	46,055	2.7	3.201	3.2	4,570	7,770	2,559	0.265	0.288	415	706	2.11	182	
Wall Insul.	7	2	7	2	0	13,924	0.3	407	0.0	0	407	10	860	1,989	0.169	203	0.000	203	
Open Blown Ceiling Insul.	16	10	15	10	1	10,050	0.8	917	1.3	1,831	2,748	4	382	628	0.076	92	1.268	1,831	
Cavity Fill Insul.	6	4	5	4	1	3,444	0.5	586	1.1	1,608	2,194	6	498	574	0.121	147	1.113	1,608	
Sloped Attic Insul.	10	5	10	5	0	3,643	0.4	506	0.0	0	506	6	495	364	0.084	101	0.000	0	
Kneewall Insul.	7	3	7	3	0	2,035	0.1	64	0.0	0	64	2	150	291	0.018	21	0.000	0	
Infil. Reduction	16	10	15	10	1	6,941	0.1	64	0.1	163	227	2	142	434	0.005	6	0.113	163	
Found./Crawl. Insul.	12	7	11	7	1	5,104	0.5	657	0.2	246	903	3	281	425	0.078	94	0.170	246	
Bandjoist Insul.	8	1	7	-	1	913	0.0	0	0.0	51	51	3	290	114	0.000	0	0.036	51	
Furnace Blower Fan ¹	17	10	17	-	10	0	0.0	0	0.5	671	671	(0)	(8)	0	0.000	0	0.046	67	
Exhaust Ventilation ²	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	
Total Heating System Repl	7	0	7	-	0	21,225	0.0	0.0	0.0	0	0	15	1,259	3,032	-	-	-	2.09	
Condensing Htg Sys Repl	7	0	7	-	-	21,225	0.0	0	0.0	0	0	15	1,259	3,032	-	-	-	2.09	
Non-Cond Htg Sys Repl	0	0	0	-	-	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	
Electric Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	
Heat Pump Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	
Other Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	
	Total			Number of Measures by Fuel Type			Summer		Annual kWh	Pk-Day therms	Annual therms		Summer		Annual kWh	Pk-Day therms	Annual therms		
				Total	Electric	Gas	kW	kW					kW	kW					
Water Heating	14	4	10	23	7	16	16,834	0.0	0.0	412	2.6	458	1,202	0.000	0.002	103	0.265	46	
Temp. Reduct.	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	-	-	-	-	-	
WH Wrap	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	-	-	-	-	-	
Pipe Insul.	7	3	4	7	3	4	140	0.0	0.0	128	0.1	20	20	0.000	0.000	-	43	0.01	
LF Showerhead	2	0	2	2	0	2	20	0.0	0.0	0	0.1	25	10	-	-	-	0.04	12	
Faucet Aerator	4	1	3	6	3	3	24	0.0	0.0	97	0.0	7	6	0.000	0.002	-	97	0.01	
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	
Hi-Eff or Electric Wtr Htr Repl.	12	2	10	8	1	7	16,650	0.0	0.0	188	2.5	405	1,388	0.000	0.002	94	0.25	41	
Lighting	9	9		49	49		343	0.1	0.1	681	-	-	38	0.008	0.015	76	-	-	
Refrigerator/Freezer³	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-	
Refrigerator Removal	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-	
Refrigerator Exchange	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-	
Freezer Removal	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-	
Freezer Exchange	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-	
Total Non-Efficiency Measures	18					21,766						1,209							
Misc Ins,Attic Access/Vent	6					911												152	
Duct Sealing	0					0												0	
Duct Insulation	0					0												0	
Damming Material	0					0												0	
Htg. Sys. Tune & Clean	2					250												125	
Htg. Sys./WH Other	0					0												0	
Air Conditioning Work	0					0												0	
Water Heater Repair	0					0												0	
Refrigerator Coil Clean	0					0												0	
Waterbed Mattress Pad	0					0												0	
Programmable Tstat	0					0												0	
Unspecified Utility Meas.	0					0												0	
CO Detector	0					0												0	
Smoke Detector	0					0												0	
Fuses	0					0												0	
Htg Sys Safety Check	0					0												0	
Htg Sys Ventilation	9					2,050												228	
Water Heater Ventilation	9					1,750												194	
Bathroom Ventilation	0					0												0	
Dryer Ventilation	0					0												0	
Kitchen Ventilation	0					0												0	
Other Exhaust Ventilation	0					0												0	
Asbestos Removal (Minor)	0					0												0	
Health/Safety Repairs	4					271												68	
Health/Safety Other	0					0												0	
Consumables	0					0												0	
General Repairs	15					5,047												336	
Meter Refrig (no action)	0					0												0	
Meter Freezer (no action)	0					0												0	
Support	18					11,487												638	
Transportation Allowance	0					0												0	
Landlord Contr Misc	0					0												0	
Landlord Contr Furnace	0					0												0	
Landlord Contr DHW	0					0												0	
Client Contr (Any)	0					0												0	
Lead Safe Work	0					0												0	
Unspecified/Other	0					0												0	

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Mid-Iowa Community Action
Billing Adjusted Costs and Impacts for Utility-Funded Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$496,034

Utility Administration Expenditures: -

Total Labor and Material Expenditures: \$496,034

Measure	Number of Dwellings with Impacts			Number of Dwellings with Electricity Impacts		Spending on Materials & Labor (\$)	Billing Adjusted First-Year Savings						Average Billing Adjusted First Year Costs and Savings per Dwelling Receiving Measures								
	Total	Electric	Gas	Season Cooling	Heating		Summer kW	Electricity			Pk-Day therms	Gas Annual therms	Spending on Materials & Labor (\$)	Summer kW	Electricity		Annual kWh	Pk-Day therms	Gas Annual therms		
								Winter kWh	Annual kWh	Winter kWh					Winter kWh	Winter kWh					
Total Efficiency Measures	84	74	74	74	74	403,596	13.4	6.1			33,301	178	17,310	4,805	0.180	0.082		450	2.41	234	
Total Shell & Htg. Sys. Repl	84	74	74	70	74	346,475	12.1	14,639	4.4	6,880	21,519	169	15,753	4,125	0.173	209	0.060	93	291	2.28	213
Total Shell Measures	84	74	74	70	74	240,630	12.1	14,639	4.4	6,880	21,519	96	8,961	2,865	0.173	209	0.060	93	291	1.30	121
Wall Insul.	44	37	40	37	0	80,196	4.3	5,151	0.0	0	5,151	37	3,439	1,823	0.115	139	0.000	0	139	0.92	86
Open Blown Ceiling Insul.	68	59	59	59	1	52,460	3.5	4,188	0.6	875	5,063	16	1,456	771	0.059	71	0.560	875	86	0.26	25
Cavity Fill Insul.	23	18	20	18	0	23,155	1.1	1,286	0.0	0	1,286	15	1,356	1,007	0.059	71	0.000	0	71	0.73	68
Sloped Attic Insul.	35	28	31	28	0	14,408	1.7	2,098	0.0	0	2,098	16	1,449	412	0.062	75	0.000	0	75	0.50	47
Kneewall Insul.	33	29	29	29	0	14,919	0.5	625	0.0	0	625	3	274	452	0.018	22	0.000	0	22	0.10	9
Infil. Reduction	77	62	69	62	1	26,651	0.4	430	0.0	58	488	4	404	346	0.006	7	0.037	58	8	0.06	6
Found./Crawl. Insul.	35	14	35	14	0	27,016	0.7	861	0.0	0	861	6	547	772	0.051	62	0.000	0	62	0.17	16
Bandjoist Insul.	12	0	12	-	0	1,826	0.0	0	0.0	0	0	1	58	152	-	-	-	-	-	0.05	5
Furnace Blower Fan ¹	83	73	74	-	73	0	0.0	0	3.8	5,948	5,948	(0)	(24)	0	0.000	0	0.052	81	81	(0.00)	(0)
Exhaust Ventilatio ²	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Total Heating System Repl	55	0	55	-	0	105,845	0.0	0	0.0	0	0	73	6,792	1,924	-	-	-	-	-	1.33	123
Condensing Htg Sys Repl	55	0	55	-	-	105,845	0.0	0	0.0	0	0	73	6,792	1,924	-	-	-	-	-	1.33	123
Non-Cond Htg Sys Repl	0	0	0	-	-	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Electric Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Heat Pump Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Other Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
	Total	Electric	Gas	Number of Measures by Fuel Type			Summer kW	Winter kWh			Annual kWh	Pk-Day therms	Annual therms		Summer kW	Winter kWh		Annual kWh	Pk-Day therms	Annual therms	
Water Heating	66	13	53	94	16	78	48,999	0.0	0.0			1,147	9.1	1,557	742	0.000	0.002		88	0.171	29
Temp. Reduct.	0	0	0	0	0	0	0	0.0	0.0			0	0.0	0	0	-	-		-	-	-
WH Wrap	0	0	0	0	0	0	0	0.0	0.0			0	0.0	0	0	-	-		-	-	-
Pipe Insul.	41	7	34	41	7	34	275	0.0	0.0			295	0.3	112	7	0.000	0.000		42	0.01	3
LF Showerhead	3	0	3	3	0	3	14	0.0	0.0			0	0.1	24	5	-	-		-	0.03	8
Faucet Aerator	10	3	7	12	3	9	31	0.0	0.0			97	0.0	14	3	0.000	0.001		32	0.01	2
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0.0	0.0			0	0.0	0	0	-	-		-	-	-
Hi-Eff or Electric Wtr Htr Repl.	40	6	34	38	6	32	48,679	0.0	0.0			755	8.6	1,407	1,217	0.000	0.003		126	0.25	41
Lighting	41	41		387	387		997	0.5	1.0			5,119	-	-	24	0.013	0.024		125	-	-
Refrigerator/Freezer ³	11	11		11	11		7,125	0.7	0.6			5,516	-	-	648	0.062	0.058		501	-	-
Refrigerator Removal	0	0		0	0		0	0.0	0.0			0	-	-	0	-	-		-	-	-
Refrigerator Exchange	11	11		11	11		7,125	0.7	0.6			5,516	-	-	648	0.062	0.058		501	-	-
Freezer Removal	0	0		0	0		0	0.0	0.0			0	-	-	0	-	-		-	-	-
Freezer Exchange	0	0		0	0		0	0.0	0.0			0	-	-	0	-	-		-	-	-
Total Non-Efficiency Measures	84						92,438								1,100						
Misc Ins,Attic Access/Vent	43						9,621								224						
Duct Sealing	0						0								0						
Duct Insulation	0						0								0						
Damming Material	0						0								0						
Htg. Sys. Tune & Clean	14						1,352								97						
Htg. Sys./WH Other	0						0								0						
Air Conditioning Work	0						0								0						
Water Heater Repair	0						0								0						
Refrigerator Coil Clean	0						0								0						
Waterbed Mattress Pad	0						0								0						
Programmable Tstat	0						0								0						
Unspecified Utility Meas.	0						0								0						
CO Detector	0						0								0						
Smoke Detector	0						0								0						
Fuses	0						0								0						
Htg Sys Safety Check	0						0								0						
Htg Sys Ventilation	54						8,142								151						
Water Heater Ventilation	37						3,866								104						
Bathroom Ventilation	0						0								0						
Dryer Ventilation	0						0								0						
Kitchen Ventilation	0						0								0						
Other Exhaust Ventilation	0						0								0						
Asbestos Removal (Minor)	0						0								0						
Health/Safety Repairs	11						737								67						
Health/Safety Other	0						0								0						
Consumables	0						0								0						
General Repairs	76						23,625								311						
Meter Refrig (no action)	46						0								0						
Meter Freezer (no action)	22						0								0						
Support	84						45,094								537						
Transportation Allowance	0						0								0						
Landlord Contr Misc	0						0								0						
Landlord Contr Furnace	0						0								0						
Landlord Contr DHW	0						0								0						
Client Contr (Any)	0						0								0						
Lead Safe Work	0						0								0						
Unspecified/Other	0						0								0						

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

Mid-Sioux Opportunity
Billing Adjusted Costs and Impacts for Utility-Funded Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$119,806

Utility Administration Expenditures: -

Total Labor and Material Expenditures: \$119,806

Measure	Number of Dwellings with Impacts			Number of Dwellings with Electricity Impacts		Spending on Materials & Labor (\$)	Billing Adjusted First-Year Savings						Average Billing Adjusted First Year Costs and Savings per Dwelling Receiving Measures								
	Total	Electric	Gas	Season Cooling	Heating		Summer kW	Electricity		Annual kWh	Gas		Spending on Materials & Labor (\$)	Summer kW	Electricity		Annual kWh	Gas			
								kWh	kWh		Pk-Day therms	Annual therms			kWh	kWh		Pk-Day therms	Annual therms		
Total Efficiency Measures	21	19	14	19	19	97,740	4.8	3.3	15,077	25	2,417	4,654	0.251	0.175	794	1.77	173				
Total Shell & Htg. Sys. Repl	21	19	14	19	19	76,801	4.2	5.098	2.5	3,769	8,867	23	2,089	3,657	0.222	268	0.130	198	467	1.64	149
Total Shell Measures	21	19	14	19	19	45,267	4.2	5.098	2.4	3,693	8,791	12	1,133	2,156	0.222	268	0.127	194	463	0.89	81
Wall Insul.	11	10	7	10	1	19,483	1.3	1,619	1.2	1,855	3,474	6	527	1,771	0.134	162	1.213	1,855	347	0.83	75
Open Blown Ceiling Insul.	19	18	11	18	2	13,116	1.9	2,239	0.5	765	3,004	3	295	690	0.103	124	0.250	382	167	0.29	27
Cavity Fill Insul.	4	4	2	4	0	2,327	0.3	341	0.0	0	341	1	77	582	0.071	85	0.000	0	85	0.42	38
Sloped Attic Insul.	6	6	3	6	0	1,570	0.4	448	0.0	0	448	1	93	262	0.062	75	0.000	0	75	0.34	31
Kneewall Insul.	6	6	3	6	0	877	0.1	175	0.0	0	175	0	33	146	0.024	29	0.000	0	29	0.12	11
Infil. Reduction	20	14	13	14	2	6,096	0.2	199	0.1	157	356	1	107	305	0.012	14	0.051	79	25	0.09	8
Found./Crawl. Insul.	2	1	1	1	1	1,722	0.1	78	0.2	308	386	0	3	861	0.064	78	0.202	308	386	0.03	3
Bandjoist Insul.	1	1	0	-	1	77	0.0	0	0.0	22	22	0	0	77	0.000	0	0.015	22	22	-	-
Furnace Blower Fan ¹	19	17	14	-	17	0	0.0	0	0.4	585	585	(0)	(2)	0	0.000	0	0.023	34	34	(0.00)	(0)
Exhaust Ventilatio ²	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Total Heating System Repl	13	1	12	-	1	31,534	0.0	0	0.0	76	76	10	956	2,426	0.000	0	0.050	76	76	0.87	80
Condensing Htg Sys Repl	12	0	12	-	-	28,034	0.0	0	0.0	0	0	10	956	2,336	-	-	-	-	-	0.87	80
Non-Cond Htg Sys Repl	0	0	0	-	-	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Electric Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Heat Pump Repl	1	1	0	-	1	3,500	0.0	0	0.0	76	76	0	0	3,500	0.000	0	0.050	76	76	-	-
Other Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
	Total	Electric	Gas	Number of Measures by Fuel Type			Summer kW		Winter kW	Annual kWh	Pk-Day therms	Annual therms		Summer kW		Winter kW	Annual kWh	Pk-Day therms	Annual therms		
Water Heating	15	6	9	37	17	20	16,967	0.0	0.0	1,346	1.9	328	1,124	0.000	0.004	224	0.213	36			
Temp. Reduct.	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-		
WH Wrap	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-		
Pipe Insul.	14	6	8	14	6	8	280	0.0	0.0	255	0.1	21	20	0.000	0.000	0.000	43	0.01	3		
LF Showerhead	4	3	1	6	5	1	60	0.0	0.0	521	0.0	6	15	0.000	0.004	0.004	174	0.02	6		
Faucet Aerator	5	2	3	5	2	3	25	0.0	0.0	64	0.0	4	5	0.000	0.001	0.001	32	0.00	1		
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-		
Hi-Eff or Electric Wtr Htr Repl.	13	4	9	12	4	8	16,502	0.0	0.0	505	1.8	297	1,269	0.000	0.003	0.003	126	0.20	33		
Lighting	17	17		254	254		1,794	0.4	0.7	3,528	-	-	106	0.022	0.040	208	-	-			
Refrigerator/Freezer ³	3	3		3	3		2,278	0.2	0.2	1,336	-	-	759	0.055	0.051	445	-	-			
Refrigerator Removal	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-			
Refrigerator Exchange	3	3		3	3		2,278	0.2	0.2	1,336	-	-	759	0.055	0.051	445	-	-			
Freezer Removal	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-			
Freezer Exchange	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-			
Total Non-Efficiency Measures	21						22,066						1,051								
Misc Ins,Attic Access/Vent	13						1,654														
Duct Sealing	0						0														
Duct Insulation	0						0														
Damming Material	0						0														
Htg. Sys. Tune & Clean	1						75														
Htg. Sys./WH Other	0						0														
Air Conditioning Work	0						0														
Water Heater Repair	0						0														
Refrigerator Coil Clean	0						0														
Waterbed Mattress Pad	0						0														
Programmable Tstat	0						0														
Unspecified Utility Meas.	0						0														
CO Detector	0						0														
Smoke Detector	0						0														
Fuses	0						0														
Htg Sys Safety Check	0						0														
Htg Sys Ventilation	12						1,865														
Water Heater Ventilation	9						1,813														
Bathroom Ventilation	0						0														
Dryer Ventilation	0						0														
Kitchen Ventilation	0						0														
Other Exhaust Ventilation	0						0														
Asbestos Removal (Minor)	0						0														
Health/Safety Repairs	6						400														
Health/Safety Other	0						0														
Consumables	0						0														
General Repairs	17						3,662														
Meter Refrig (no action)	0						0														
Meter Freezer (no action)	0						0														
Support	21						12,597														
Transportation Allowance	0						0														
Landlord Contr Misc	0						0														
Landlord Contr Furnace	0						0														
Landlord Contr DHW	0						0														
Client Contr (Any)	0						0														
Lead Safe Work	0						0														
Unspecified/Other	0						0														

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

North Iowa Community Action Organization
Billing Adjusted Costs and Impacts for Utility-Funded Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$501,854

Utility Administration Expenditures: -

Total Labor and Material Expenditures: \$501,854

Measure	Number of Dwellings with Impacts			Number of Dwellings with Electricity Impacts		Spending on Materials & Labor (\$)	Billing Adjusted First-Year Savings						Average Billing Adjusted First Year Costs and Savings per Dwelling Receiving Measures								
	Total	Electric	Gas	Season Cooling	Heating		Summer kW	Electricity			Gas Annual therms	Spending on Materials & Labor (\$)	Summer kW	Electricity			Gas Annual therms				
								kWh	kW	kWh				kW	kWh	kW		kWh	kW		
Total Efficiency Measures	84	80	74	79	80	450,195	13.9		25.1	76,495	142	14,794	5,359	0.176		0.314	956	1.91	200		
Total Shell & Htg. Sys. Repl	82	78	74	69	78	342,782	11.2	13,542	21.6	35,683	49,225	131	12,960	4,180	0.163	196	0.277	457	631	1.78	175
Total Shell Measures	82	78	74	69	78	223,297	11.2	13,542	21.3	35,236	48,777	95	9,364	2,723	0.163	196	0.273	452	625	1.28	127
Wall Insul.	62	53	56	53	4	114,227	4.5	5,424	4.4	7,288	12,712	32	3,202	1,842	0.085	102	1.103	1,822	240	0.58	57
Open Blown Ceiling Insul.	78	67	71	67	4	38,011	4.3	5,215	6.5	10,772	15,986	39	3,812	487	0.065	78	1.630	2,693	239	0.54	54
Cavity Fill Insul.	28	24	25	23	2	16,260	0.5	554	1.8	2,945	3,498	4	440	581	0.020	24	0.891	1,472	146	0.18	18
Sloped Attic Insul.	45	40	41	40	2	24,352	1.3	1,512	0.9	1,513	3,025	14	1,341	541	0.031	38	0.458	757	76	0.33	33
Kneewall Insul.	24	22	21	22	1	18,441	0.3	381	0.1	87	468	3	299	768	0.014	17	0.053	87	21	0.14	14
Infil. Reduction	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Found./Crawl. Insul.	27	9	25	9	2	8,541	0.4	456	0.8	1,379	1,835	2	183	316	0.042	51	0.417	690	204	0.07	7
Bandjoist Insul.	27	1	26	-	1	3,464	0.0	0	0.1	195	195	1	118	128	0.000	0	0.118	195	195	0.05	5
Furnace Blower Fan ¹	77	73	74	-	73	0	0.0	0	6.7	11,057	11,057	(0)	(31)	0	0.000	0	0.092	151	151	(0.00)	(0)
Exhaust Ventilatio ²	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Total Heating System Repl	51	3	48	-	3	119,485	0.0	0	0.3	448	448	36	3,596	2,343	0.000	0	0.090	149	149	0.76	75
Condensing Htg Sys Repl	48	0	48	-	-	112,538	0.0	0	0.0	0	0	36	3,596	2,345	-	-	-	-	-	0.76	75
Non-Cond Htg Sys Repl	0	0	0	-	-	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Electric Htg Sys Repl	3	3	0	-	3	6,947	0.0	0	0.3	448	448	0	0	2,316	0.000	0	0.090	149	149	-	-
Heat Pump Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Other Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
	Total	Electric	Gas	Number of Measures by Fuel Type			Summer kW		Winter kW	Annual kWh	Pk-Day therms	Annual therms		Summer kW		Winter kW	Annual kWh	Pk-Day therms	Annual therms		
Water Heating	79	17	62	281	55	226	83,902	0.0	0.1	4,040	10.2	1,834	1,062	0.000		0.005	238	0.165	30		
Temp. Reduct.	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-	-	
WH Wrap	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-	-	
Pipe Insul.	78	17	61	78	17	61	337	0.0	0.0	722	0.4	126	4	0.000	0.000	0.000	42	0.01	2		
LF Showerhead	37	10	27	37	10	27	110	0.0	0.0	1,736	0.4	137	3	0.000	0.004	0.004	174	0.02	5		
Faucet Aerator	64	14	50	99	21	78	51	0.0	0.0	687	0.3	77	1	0.000	0.001	0.001	49	0.01	2		
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-	-	
Hi-Eff or Electric Wtr Htr Repl.	67	7	60	67	7	60	83,404	0.0	0.0	896	9.2	1,494	1,245	0.000	0.003	0.003	128	0.15	25		
Lighting	72	72		699	699		3,634	1.1	1.9	10,051	-	-	50	0.015		0.027	140	-	-	-	
Refrigerator/Freezer ³	25	25		26	26		19,878	1.6	1.5	13,179	-	-	795	0.065		0.061	527	-	-	-	
Refrigerator Removal	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-	-	-	
Refrigerator Exchange	22	22		20	20		17,185	1.2	1.1	9,975	-	-	781	0.056	0.052	0.052	453	-	-	-	
Freezer Removal	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-	-	-	
Freezer Exchange	6	6		6	6		2,693	0.4	0.4	3,204	-	-	449	0.066	0.061	0.061	534	-	-	-	
Total Non-Efficiency Measures	84					51,659							615								
Misc Ins,Attic Access/Vent	0					0							0								
Duct Sealing	0					0							0								
Duct Insulation	0					0							0								
Damming Material	0					0							0								
Htg. Sys. Tune & Clean	0					0							0								
Htg. Sys./WH Other	0					0							0								
Air Conditioning Work	0					0							0								
Water Heater Repair	0					0							0								
Refrigerator Coil Clean	0					0							0								
Waterbed Mattress Pad	0					0							0								
Programmable Tstat	0					0							0								
Unspecified Utility Meas.	0					0							0								
CO Detector	0					0							0								
Smoke Detector	0					0							0								
Fuses	0					0							0								
Htg Sys Safety Check	0					0							0								
Htg Sys Ventilation	5					1,099							220								
Water Heater Ventilation	0					0							0								
Bathroom Ventilation	0					0							0								
Dryer Ventilation	0					0							0								
Kitchen Ventilation	0					0							0								
Other Exhaust Ventilation	0					0							0								
Asbestos Removal (Minor)	0					0							0								
Health/Safety Repairs	67					83,404							1,245								
Health/Safety Other	0					0							0								
Consumables	0					0							0								
General Repairs	0					0							0								
Meter Refrig (no action)	0					0							0								
Meter Freezer (no action)	0					0							0								
Support	84					50,560							602								
Transportation Allowance	0					0							0								
Landlord Contr Misc	0					0							0								
Landlord Contr Furnace	0					0							0								
Landlord Contr DHW	0					0							0								
Client Contr (Any)	0					0							0								
Lead Safe Work	0					0							0								
Unspecified/Other	0					0							0								

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Northeast Iowa Community Action Corporation
Billing Adjusted Costs and Impacts for Utility-Funded Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$232,743

Utility Administration Expenditures: -

Total Labor and Material Expenditures: \$232,743

Measure	Number of Dwellings with Impacts			Number of Dwellings with Electricity Impacts		Spending on Materials & Labor (\$)	Billing Adjusted First-Year Savings					Average Billing Adjusted First Year Costs and Savings per Dwelling Receiving Measures							
	Total	Electric	Gas	Season Cooling	Heating		Summer kW	Electricity		Annual kWh	Pk-Day therms	Gas Annual therms	Spending on Materials & Labor (\$)	Summer kW	Electricity		Annual kWh	Pk-Day therms	Gas Annual therms
								kWh	kWh						kWh	kWh			
Total Efficiency Measures	86	68	65	66	68	196,593	5.8	4.2	19,611	63	6,127	2,286	0.087	0.062	288	0.97	94		
Total Shell & Htg. Sys. Repl	78	64	55	56	64	154,676	5.0	5,994	3.1	4,820	10,814	1,983	0.089	107	0.048	75	169		
Total Shell Measures	78	64	55	56	64	65,621	5.0	5,994	3.1	4,820	10,814	841	0.089	107	0.048	75	169		
Wall Insul.	12	10	12	10	0	7,576	1.2	1,428	0.0	0	1,428	631	0.118	143	0.000	0	143		
Open Blown Ceiling Insul.	40	28	34	28	2	17,436	2.9	3,497	0.5	809	4,306	436	0.104	125	0.259	405	154		
Cavity Fill Insul.	3	2	2	2	0	1,034	0.1	133	0.0	0	133	345	0.055	66	0.000	0	66		
Sloped Attic Insul.	0	0	0	0	0	0	0.0	0	0.0	0	0	0	-	-	-	-	-		
Kneewall Insul.	9	5	9	5	0	5,772	0.1	179	0.0	0	179	641	0.030	36	0.000	0	36		
Infil. Reduction	57	47	28	47	4	14,489	0.6	698	0.8	1,294	1,993	254	0.012	15	0.207	324	42		
Found./Crawl. Insul.	9	1	9	1	0	6,717	0.0	60	0.0	0	60	78	0.050	60	0.000	0	60		
Bandjoist Insul.	34	1	33	-	1	12,597	0.0	0	0.1	200	200	371	0.000	0	0.128	200	200		
Furnace Blower Fan ¹	74	60	55	-	60	0	0.0	0	1.6	2,516	2,516	(10)	0.000	0	0.027	42	42		
Exhaust Ventilatio ²	0	0	0	0	0	0	0.0	0	0.0	0	0	0	-	-	-	-	-		
Total Heating System Repl	38	0	38	-	0	89,055	0.0	0	0.0	0	0	35	3,291	-	-	-	-		
Condensing Htg Sys Repl	38	0	38	-	-	89,055	0.0	0	0.0	0	0	35	3,291	-	-	-	-		
Non-Cond Htg Sys Repl	0	0	0	-	-	0	0.0	0	0.0	0	0	0	-	-	-	-	-		
Electric Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	-	-	-	-	-		
Heat Pump Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	-	-	-	-	-		
Other Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	-	-	-	-	-		
	Total	Electric	Gas	Total	Electric	Gas	Summer kW	Winter kW	Annual kWh	Pk-Day therms	Annual therms		Summer kW	Winter kW	Annual kWh	Pk-Day therms	Annual therms		
Water Heating	64	21	43	89	27	61	36,858	0.0	0.0	1,688	2.8	492	576	0.000	0.001	80	0.064		
Temp. Reduct.	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	-	-	-	-		
WH Wrap	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	-	-	-	-		
Pipe Insul.	61	21	40	61	21	40	485	0.0	0.0	885	0.2	82	8	0.000	0.000	42	0.01		
LF Showerhead	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	-	-	-	-		
Faucet Aerator	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	-	-	-	-		
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	-	-	-	-		
Hi-Eff or Electric Wtr Htr Repl.	29	7	22	28	6	21	36,374	0.0	0.0	803	2.5	410	1,254	0.000	0.003	115	0.11		
Lighting	39	39		224	224		509	0.4	0.8	3,899	-	-	13	0.010	0.019	100	-		
Refrigerator/Freezer ³	7	7		6	6		4,550	0.4	0.4	3,210	-	-	650	0.056	0.053	459	-		
Refrigerator Removal	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-		
Refrigerator Exchange	5	5		4	4		3,860	0.3	0.3	2,244	-	-	772	0.055	0.052	449	-		
Freezer Removal	1	1		1	1		40	0.1	0.1	534	-	-	40	0.066	0.061	534	-		
Freezer Exchange	1	1		1	1		650	0.1	0.0	432	-	-	650	0.053	0.050	432	-		
Total Non-Efficiency Measures	85						36,150						425						
Misc Ins,Attic Access/Vent	9						1,158						129						
Duct Sealing	0						0						0						
Duct Insulation	1						62						62						
Damming Material	0						0						0						
Htg. Sys. Tune & Clean	2						170						85						
Htg. Sys./WH Other	0						0						0						
Air Conditioning Work	0						0						0						
Water Heater Repair	0						0						0						
Refrigerator Coil Clean	0						0						0						
Waterbed Mattress Pad	0						0						0						
Programmable Tstat	0						0						0						
Unspecified Utility Meas.	0						0						0						
CO Detector	0						0						0						
Smoke Detector	0						0						0						
Fuses	0						0						0						
Htg Sys Safety Check	0						0						0						
Htg Sys Ventilation	30						5,723						191						
Water Heater Ventilation	21						3,296						157						
Bathroom Ventilation	0						0						0						
Dryer Ventilation	0						0						0						
Kitchen Ventilation	0						0						0						
Other Exhaust Ventilation	0						0						0						
Asbestos Removal (Minor)	0						0						0						
Health/Safety Repairs	4						315						79						
Health/Safety Other	0						0						0						
Consumables	0						0						0						
General Repairs	37						4,294						116						
Meter Refrig (no action)	30						0						0						
Meter Freezer (no action)	8						0						0						
Support	85						21,133						249						
Transportation Allowance	0						0						0						
Landlord Contr Misc	0						0						0						
Landlord Contr Furnace	0						0						0						
Landlord Contr DHW	0						0						0						
Client Contr (Any)	0						0						0						
Lead Safe Work	0						0						0						
Unspecified/Other	0						0						0						

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Operation: New View Community Action Agency
Billing Adjusted Costs and Impacts for Utility-Funded Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$209,637

Utility Administration Expenditures: -

Total Labor and Material Expenditures: \$209,637

Measure	Number of Dwellings with Impacts			Number of Dwellings with Electricity Impacts		Spending on Materials & Labor (\$)	Billing Adjusted First-Year Savings						Average Billing Adjusted First Year Costs and Savings per Dwelling Receiving Measures								
	Total	Electric	Gas	Season Cooling	Heating		Summer kW	Electricity			Gas		Spending on Materials & Labor (\$)	Summer kW	Electricity		Gas				
								kWh	kW	kWh	Annual kWh	Pk-Day therms			Annual therms	kWh	kW	kWh	Annual kWh	Pk-Day therms	Annual therms
Total Efficiency Measures	38	36	31	36	36	173,517	5.6	2.6		18,137		42	3,978	4,566	0.156	0.072		504		1.34	128
Total Shell & Htg. Sys. Repl	38	36	31	28	36	145,841	4.4	5,258	0.5	781	6,039	40	3,654	3,838	0.156	188	0.014	22	168	1.28	118
Total Shell Measures	38	36	31	28	36	95,025	4.4	5,258	0.5	781	6,039	26	2,359	2,501	0.156	188	0.014	22	168	0.83	76
Wall Insul.	23	15	19	15	0	31,508	1.7	2,027	0.0	0	2,027	9	806	1,370	0.112	135	0.000	0	135	0.46	42
Open Blown Ceiling Insul.	25	20	18	20	0	19,569	1.2	1,477	0.0	0	1,477	5	450	783	0.061	74	0.000	0	74	0.27	25
Cavity Fill Insul.	16	9	14	9	0	21,034	0.4	518	0.0	0	518	8	710	1,315	0.048	58	0.000	0	58	0.55	51
Sloped Attic Insul.	17	12	13	12	0	4,366	0.4	541	0.0	0	541	2	209	257	0.037	45	0.000	0	45	0.17	16
Kneewall Insul.	5	4	5	4	0	1,161	0.1	177	0.0	0	177	2	140	232	0.037	44	0.000	0	44	0.31	28
Infil. Reduction	30	28	2	28	1	11,767	0.3	408	0.1	141	550	0	10	392	0.012	15	0.092	141	20	0.06	5
Found./Crawl. Insul.	9	2	7	2	1	4,836	0.1	110	0.2	296	406	0	28	537	0.046	55	0.192	296	203	0.04	4
Bandjoist Insul.	7	0	7	-	0	783	0.0	0	0.0	0	0	0	10	112	-	-	-	-	-	0.01	1
Furnace Blower Fan ¹	37	35	31	-	35	0	0.0	0	0.2	344	344	(0)	(4)	0	0.000	0	0.006	10	10	(0.00)	(0)
Exhaust Ventilatio ²	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Total Heating System Repl	19	0	19	-	0	50,817	0.0	0	0.0	0	0	14	1,295	2,675	-	-	-	-	-	0.74	68
Condensing Htg Sys Repl	19	0	19	-	-	50,817	0.0	0	0.0	0	0	14	1,295	2,675	-	-	-	-	-	0.74	68
Non-Cond Htg Sys Repl	0	0	0	-	-	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Electric Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Heat Pump Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Other Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
	Total	Electric	Gas	Number of Measures by Fuel Type			Summer kW	Winter kW		Annual kWh	Pk-Day therms	Annual therms		Summer kW	Winter kW		Annual kWh	Pk-Day therms	Annual therms		
Water Heating	28	11	17	38	11	27	20,615	0.0	0.0	463	1.9	325	736	0.000	0.000	42	0.112	19			
Temp. Reduct.	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-		
WH Wrap	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-		
Pipe Insul.	26	11	15	26	11	15	520	0.0	0.0	463	0.1	28	20	0.000	0.000	42	0.01	2			
LF Showerhead	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-		
Faucet Aerator	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-		
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-		
Hi-Eff or Electric Wtr Htr Repl.	14	0	14	12	0	12	20,095	0.0	0.0	0	1.8	297	1,435	-	-	-	-	0.13	21		
Lighting	34	34		454	453		3,124	1.0	1.8	9,360	-	-	92	0.029	0.053	275	-	-			
Refrigerator/Freezer ³	5	5		5	5		3,937	0.3	0.3	2,275	-	-	787	0.056	0.052	455	-	-			
Refrigerator Removal	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-	-		
Refrigerator Exchange	5	5		5	5		3,937	0.3	0.3	2,275	-	-	787	0.056	0.052	455	-	-	-		
Freezer Removal	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-	-		
Freezer Exchange	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-	-		
Total Non-Efficiency Measures	38					36,120							951								
Misc Ins,Attic Access/Vent	17					1,891														111	
Duct Sealing	0					0														0	
Duct Insulation	0					0														0	
Damming Material	0					0														0	
Htg. Sys. Tune & Clean	12					1,007														84	
Htg. Sys./WH Other	0					0														0	
Air Conditioning Work	0					0														0	
Water Heater Repair	0					0														0	
Refrigerator Coil Clean	0					0														0	
Waterbed Mattress Pad	0					0														0	
Programmable Tstat	1					100														100	
Unspecified Utility Meas.	0					0														0	
CO Detector	0					0														0	
Smoke Detector	0					0														0	
Fuses	0					0														0	
Htg Sys Safety Check	0					0														0	
Htg Sys Ventilation	21					4,900														233	
Water Heater Ventilation	13					3,020														232	
Bathroom Ventilation	0					0														0	
Dryer Ventilation	0					0														0	
Kitchen Ventilation	0					0														0	
Other Exhaust Ventilation	0					0														0	
Asbestos Removal (Minor)	0					0														0	
Health/Safety Repairs	14					20,095														1,435	
Health/Safety Other	0					0														0	
Consumables	0					0														0	
General Repairs	32					6,611														207	
Meter Refrig (no action)	0					0														0	
Meter Freezer (no action)	0					0														0	
Support	38					18,591														489	
Transportation Allowance	0					0														0	
Landlord Contr Misc	0					0														0	
Landlord Contr Furnace	0					0														0	
Landlord Contr DHW	0					0														0	
Client Contr (Any)	0					0														0	
Lead Safe Work	0					0														0	
Unspecified/Other	0					0														0	

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Operation Threshold

Billing Adjusted Costs and Impacts for Utility-Funded Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$298,306

Utility Administration Expenditures: -

Total Labor and Material Expenditures: \$298,306

Measure	Number of Dwellings with Impacts			Number of Dwellings with Electricity Impacts		Spending on Materials & Labor (\$)	Billing Adjusted First-Year Savings						Average Billing Adjusted First Year Costs and Savings per Dwelling Receiving Measures										
	Total	Electric	Gas	Season Cooling	Heating		Summer kW	Electricity			Gas		Spending on Materials & Labor (\$)	Summer kW	Electricity		Gas						
								kWh	kWh	Annual kWh	Pk-Day therms	Annual therms			kWh	kWh	kWh	Annual kWh	Pk-Day therms	Annual therms			
Total Efficiency Measures	53	50	48	47	50	257,580	8.9	7.1			27,665	94	9,190		4,860	0.190	0.142		553	1.95	191		
Total Shell & Htg. Sys. Repl	53	50	48	40	50	190,001	8.1	9,762	6.0	9,393	19,155	88	8,228	3,585	0.202	244	0.120	188	383	1.84	171		
Total Shell Measures	53	50	48	40	50	121,963	8.1	9,762	6.0	9,393	19,155	59	5,479	2,301	0.202	244	0.120	188	383	1.23	114		
Wall Insul.	32	26	32	26	0	50,774	3.1	3,718	0.0	0	3,718	20	1,868	1,587	0.119	143	0.000	0	143	0.63	58		
Open Blown Ceiling Insul.	49	39	46	39	1	29,025	3.2	3,887	2.0	3,155	7,042	23	2,125	592	0.083	100	2.021	3,155	181	0.50	46		
Cavity Fill Insul.	11	8	10	8	0	10,339	0.5	659	0.0	0	659	6	551	940	0.068	82	0.000	0	82	0.59	55		
Sloped Attic Insul.	16	13	15	13	0	5,158	0.6	679	0.0	0	679	4	369	322	0.043	52	0.000	0	52	0.26	25		
Kneewall Insul.	10	9	8	9	0	2,491	0.1	169	0.0	0	169	1	95	249	0.016	19	0.000	0	19	0.13	12		
Infil. Reduction	50	40	47	40	1	19,059	0.5	591	0.1	98	689	4	347	381	0.012	15	0.063	98	17	0.08	7		
Found./Crawl. Insul.	8	1	8	1	0	1,974	0.0	60	0.0	0	60	0	39	247	0.050	60	0.000	0	60	0.05	5		
Bandjoist Insul.	32	1	31	-	1	3,142	0.0	0	0.1	142	142	1	104	98	0.000	0	0.091	142	142	0.04	3		
Furnace Blower Fan ¹	52	49	48	-	49	0	0.0	0	3.8	5,998	5,998	(0)	(18)	0	0.000	0	0.078	122	122	(0.00)	(0)		
Exhaust Ventilatio ²	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-		
Total Heating System Repl	34	0	34	-	0	68,038	0.0	0	0.0	0	0	30	2,750	2,001	-	-	-	-	-	-	0.87	81	
Condensing Htg Sys Repl	34	0	34	-	-	68,038	0.0	0	0.0	0	0	30	2,750	2,001	-	-	-	-	-	-	0.87	81	
Non-Cond Htg Sys Repl	0	0	0	-	-	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-	-	
Electric Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-	-	
Heat Pump Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-	-	
Other Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-	-	
	Total	Electric	Gas	Total	Electric	Gas		Summer kW	Winter kW	Annual kWh	Pk-Day therms	Annual therms		Summer kW	Winter kW	Annual kWh	Pk-Day therms	Annual therms					
Water Heating	49	9	40	102	16	85	59,723	0.0	0.0	1,174	5.5	962	1,219	0.000	0.002	130	0.137	24					
Temp. Reduct.	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-					
WH Wrap	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-					
Pipe Insul.	48	8	40	48	8	40	920	0.0	0.0	337	0.3	97	19	0.000	0.000	0.000	42	0.01	2				
LF Showerhead	5	1	4	5	1	4	50	0.0	0.0	171	0.1	23	10	0.000	0.004	0.000	171	0.02	6				
Faucet Aerator	10	2	8	13	3	10	65	0.0	0.0	97	0.0	11	7	0.000	0.001	0.000	48	0.00	1				
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-					
Hi-Eff or Electric Wtr Htr Repl.	42	5	37	36	4	31	58,688	0.0	0.0	568	5.1	831	1,397	0.000	0.003	0.000	114	0.14	22				
Lighting	34	34		193	193		1,351	0.3	0.6	2,950	-	-	40	0.009	0.017	0.000	87	-	-				
Refrigerator/Freezer ³	9	9		9	9		6,505	0.5	0.5	4,387	-	-	723	0.060	0.056	0.000	487	-	-				
Refrigerator Removal	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-					
Refrigerator Exchange	8	8		8	8		5,870	0.5	0.4	3,853	-	-	734	0.059	0.055	0.000	482	-	-				
Freezer Removal	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-					
Freezer Exchange	1	1		1	1		635	0.1	0.1	534	-	-	635	0.066	0.061	0.000	534	-	-				
Total Non-Efficiency Measures	70						40,726						582										
Misc Ins,Attic Access/Vent	28						3,496						125										
Duct Sealing	0						0						0										
Duct Insulation	0						0						0										
Damming Material	0						0						0										
Htg. Sys. Tune & Clean	10						715						72										
Htg. Sys./WH Other	0						0						0										
Air Conditioning Work	0						0						0										
Water Heater Repair	0						0						0										
Refrigerator Coil Clean	0						0						0										
Waterbed Mattress Pad	0						0						0										
Programmable Tstat	2						100						50										
Unspecified Utility Meas.	0						0						0										
CO Detector	0						0						0										
Smoke Detector	0						0						0										
Fuses	0						0						0										
Htg Sys Safety Check	0						0						0										
Htg Sys Ventilation	2						425						213										
Water Heater Ventilation	0						0						0										
Bathroom Ventilation	0						0						0										
Dryer Ventilation	0						0						0										
Kitchen Ventilation	0						0						0										
Other Exhaust Ventilation	0						0						0										
Asbestos Removal (Minor)	0						0						0										
Health/Safety Repairs	17						671						39										
Health/Safety Other	0						0						0										
Consumables	0						0						0										
General Repairs	52						9,256						178										
Meter Refrig (no action)	47						0						0										
Meter Freezer (no action)	5						0						0										
Support	50						26,063						521										
Transportation Allowance	0						0						0										
Landlord Contr Misc	0						0						0										
Landlord Contr Furnace	0						0						0										
Landlord Contr DHW	0						0						0										
Client Contr (Any)	0						0						0										
Lead Safe Work	0						0						0										
Unspecified/Other	0						0						0										

IMPACT

Billing Adjusted Costs and Impacts for Utility-Funded Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$215,359

Utility Administration Expenditures: -

Total Labor and Material Expenditures: \$215,359

Measure	Number of Dwellings with Impacts			Number of Dwellings with Electricity Impacts		Spending on Materials & Labor (\$)	Billing Adjusted First-Year Savings						Average Billing Adjusted First Year Costs and Savings per Dwelling Receiving Measures								
	Total	Electric	Gas	Season Cooling	Heating		Summer kW	Electricity			Pk-Day therms	Gas Annual therms	Spending on Materials & Labor (\$)	Summer kW	Electricity		Annual kWh	Pk-Day therms	Gas Annual therms		
								Winter kWh	Annual kWh	Winter kWh					Winter kWh	Winter kWh					
Total Efficiency Measures	31	21	28	21	21	171,827	4.1	1.9			10,933	86	8,439	5,543	0.197	0.089		521	3.07	301	
Total Shell & Htg. Sys. Repl	31	21	28	21	21	136,505	3.6	4,393	1.2	1,911	6,305	80	7,487	4,403	0.173	209	0.058	91	300	2.87	267
Total Shell Measures	31	21	28	21	21	78,878	3.6	4,393	1.2	1,821	6,214	49	4,539	2,544	0.173	209	0.056	87	296	1.74	162
Wall Insul.	13	10	12	10	0	20,984	1.2	1,394	0.0	0	1,394	16	1,446	1,614	0.116	139	0.000	0	139	1.29	121
Open Blown Ceiling Insul.	25	18	23	18	0	16,286	1.1	1,310	0.0	0	1,310	8	766	651	0.060	73	0.000	0	73	0.36	33
Cavity Fill Insul.	12	9	12	9	0	6,228	0.4	520	0.0	0	520	6	537	519	0.048	58	0.000	0	58	0.48	45
Sloped Attic Insul.	8	7	7	7	0	2,783	0.4	472	0.0	0	472	5	431	348	0.056	67	0.000	0	67	0.66	62
Kneewall Insul.	10	7	9	7	0	3,318	0.2	199	0.0	0	199	4	363	332	0.024	28	0.000	0	28	0.43	40
Infil. Reduction	31	17	28	17	1	12,944	0.1	127	0.1	188	314	6	578	418	0.006	7	0.120	188	18	0.22	21
Found./Crawl. Insul.	12	6	11	6	1	13,206	0.3	371	0.2	254	626	3	297	1,101	0.051	62	0.163	254	104	0.29	27
Bandjoist Insul.	17	1	16	-	1	3,129	0.0	0	0.1	101	101	1	133	184	0.000	0	0.065	101	101	0.09	8
Furnace Blower Fan ¹	30	20	28	-	20	0	0.0	0	0.8	1,277	1,277	(0)	(12)	0	0.000	0	0.041	64	64	(0.00)	(0)
Exhaust Ventilatio ²	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Total Heating System Repl	21	1	20	-	1	57,627	0.0	0	0.1	91	91	32	2,948	2,744	0.000	0	0.058	91	91	1.58	147
Condensing Htg Sys Repl	20	0	20	-	-	55,027	0.0	0	0.0	0	0	32	2,948	2,751	-	-	-	-	-	1.58	147
Non-Cond Htg Sys Repl	0	0	0	-	-	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Electric Htg Sys Repl	1	1	0	-	1	2,600	0.0	0	0.1	91	91	0	0	2,600	0.000	0	0.058	91	91	-	-
Heat Pump Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Other Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
	Total	Electric	Gas	Number of Measures by Fuel Type			Summer kW	Winter kW			Annual kWh	Pk-Day therms	Annual therms		Summer kW	Winter kW		Annual kWh	Pk-Day therms	Annual therms	
Water Heating	26	3	23	42	4	38	30,290	0.0	0.0			285	5.5	952	1,165	0.000	0.002		95	0.240	41
Temp. Reduct.	0	0	0	0	0	0	0	0.0	0.0			0	0.0	0	0	-	-		-	-	-
WH Wrap	0	0	0	0	0	0	0	0.0	0.0			0	0.0	0	0	-	-		-	-	-
Pipe Insul.	25	2	23	25	2	23	250	0.0	0.0			84	0.3	97	10	0.000	0.000		42	0.01	4
LF Showerhead	0	0	0	0	0	0	0	0.0	0.0			0	0.0	0	0	-	-		-	-	-
Faucet Aerator	0	0	0	0	0	0	0	0.0	0.0			0	0.0	0	0	-	-		-	-	-
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0.0	0.0			0	0.0	0	0	-	-		-	-	-
Hi-Eff or Electric Wtr Htr Repl.	21	2	19	17	2	15	30,040	0.0	0.0			201	5.2	856	1,430	0.000	0.002		100	0.28	45
Lighting	20	20		138	138		1,058	0.2	0.4			1,889	-	-	53	0.010	0.018		94	-	-
Refrigerator/Freezer ³	5	5		5	5		3,974	0.3	0.3			2,455	-	-	795	0.060	0.056		491	-	-
Refrigerator Removal	0	0		0	0	0	0	0.0	0.0			0	-	-	0	-	-		-	-	-
Refrigerator Exchange	5	5		5	5	3,974	0.3	0.3			2,455	-	-	795	0.060	0.056		491	-	-	
Freezer Removal	0	0		0	0	0	0	0.0	0.0			0	-	-	0	-	-		-	-	-
Freezer Exchange	0	0		0	0	0	0	0.0	0.0			0	-	-	0	-	-		-	-	-
Total Non-Efficiency Measures	33					43,533								1,319							
Misc Ins,Attic Access/Vent	21						3,575														
Duct Sealing	0						0														
Duct Insulation	0						0														
Damming Material	0						0														
Htg. Sys. Tune & Clean	7						875														
Htg. Sys./WH Other	0						0														
Air Conditioning Work	0						0														
Water Heater Repair	0						0														
Refrigerator Coil Clean	0						0														
Waterbed Mattress Pad	0						0														
Programmable Tstat	0						0														
Unspecified Utility Meas.	0						0														
CO Detector	0						0														
Smoke Detector	0						0														
Fuses	0						0														
Htg Sys Safety Check	0						0														
Htg Sys Ventilation	23						5,326														
Water Heater Ventilation	20						3,744														
Bathroom Ventilation	0						0														
Dryer Ventilation	0						0														
Kitchen Ventilation	0						0														
Other Exhaust Ventilation	0						0														
Asbestos Removal (Minor)	0						0														
Health/Safety Repairs	2						38														
Health/Safety Other	0						0														
Consumables	0						0														
General Repairs	29						7,725														
Meter Refrig (no action)	13						0														
Meter Freezer (no action)	3						0														
Support	32						22,250														
Transportation Allowance	0						0														
Landlord Contr Misc	0						0														
Landlord Contr Furnace	0						0														
Landlord Contr DHW	0						0														
Client Contr (Any)	0						0														
Lead Safe Work	0						0														
Unspecified/Other	0						0														

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Total Reported Labor, Materials and Utility Admin Expenditures:	\$150,970
Utility Administration Expenditures:	-
Total Labor and Material Expenditures:	\$150,970

² Estimates are based upon reduced usage of the furnace due to shell improvements

Community Action of South Eastern Iowa
Billing Adjusted Costs and Impacts for Utility-Funded Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$482,290

Utility Administration Expenditures: -

Total Labor and Material Expenditures: \$482,290

Measure	Number of Dwellings with Impacts			Number of Dwellings with Electricity Impacts		Spending on Materials & Labor (\$)	Billing Adjusted First-Year Savings						Average Billing Adjusted First Year Costs and Savings per Dwelling Receiving Measures								
	Total	Electric	Gas	Season Cooling	Heating		Summer kW	Electricity		Annual kWh	Pk-Day therms	Gas Annual therms	Spending on Materials & Labor (\$)	Summer kW	Electricity		Annual kWh	Pk-Day therms	Gas Annual therms		
								kWh	kW						kW	kWh				kW	kWh
Total Efficiency Measures	62	54	52	54	54	436,248	17.4		4.4	30,663	191	16,888	7,036	0.322		0.081	568	3.67	325		
Total Shell & Htg. Sys. Repl	62	54	52	54	54	377,517	16.7	20,191	3.5	4,944	25,135	181	15,208	6,089	0.310	374	0.065	92	465	3.47	292
Total Shell Measures	62	54	52	54	54	258,808	16.7	20,191	3.5	4,944	25,135	107	8,976	4,174	0.310	374	0.065	92	465	2.05	173
Wall Insul.	44	38	40	38	0	112,180	6.7	8,049	0.0	0	8,049	49	4,162	2,550	0.176	212	0.000	0	212	1.24	104
Open Blown Ceiling Insul.	59	51	50	51	0	77,173	6.2	7,448	0.0	0	7,448	28	2,390	1,308	0.121	146	0.000	0	146	0.57	48
Cavity Fill Insul.	16	14	15	14	0	17,415	1.1	1,299	0.0	0	1,299	8	687	1,088	0.077	93	0.000	0	93	0.54	46
Sloped Attic Insul.	28	23	25	23	0	12,409	1.3	1,566	0.0	0	1,566	10	811	443	0.056	68	0.000	0	68	0.39	32
Kneewall Insul.	19	17	17	17	0	6,259	0.3	383	0.0	0	383	2	154	329	0.019	23	0.000	0	23	0.11	9
Infil. Reduction	46	46	34	46	0	12,871	0.5	612	0.0	0	612	3	287	280	0.011	13	0.000	0	13	0.10	8
Found./Crawl. Insul.	27	9	26	9	0	16,777	0.7	834	0.0	0	834	4	321	621	0.077	93	0.000	0	93	0.15	12
Bandjoist Insul.	30	0	30	-	0	3,725	0.0	0	0.0	0	0	2	185	124	-	-	-	-	-	0.07	6
Furnace Blower Fan ¹	62	54	52	-	54	0	0.0	0	3.5	4,944	4,944	(0)	(22)	0	0.000	0	0.065	92	92	(0.00)	(0)
Exhaust Ventilator ²	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Total Heating System Repl	45	0	45	-	0	118,709	0.0	0	0.0	0	0	74	6,233	2,638	-	-	-	-	-	1.65	139
Condensing Htg Sys Repl	45	0	45	-	-	118,709	0.0	0	0.0	0	0	74	6,233	2,638	-	-	-	-	-	1.65	139
Non-Cond Htg Sys Repl	0	0	0	-	-	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Electric Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Heat Pump Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Other Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
	Total	Electric	Gas	Number of Measures by Fuel Type			Summer kW	Winter kW		Annual kWh	Pk-Day therms	Annual therms		Summer kW	Winter kW		Annual kWh	Pk-Day therms	Annual therms		
Water Heating	42	0	42	41	0	41	54,918	0.0	0.0	0	10.3	1,679	1,308	-	-	-	-	0.245	40		
Temp. Reduct.	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-		
WH Wrap	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-		
Pipe Insul.	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-		
LF Showerhead	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-		
Faucet Aerator	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-		
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-		
Hi-Eff or Electric Wtr Htr Repl.	42	0	42	41	0	41	54,918	0.0	0.0	0	10.3	1,679	1,308	-	-	-	-	0.25	40		
Lighting	27	27	27	232	232	333	0.3	0.6	3,005	-	-	12	0.012	0.022	111	-	-	-	-		
Refrigerator/Freezer ³	5	5	5	5	5	3,480	0.3	0.3	2,523	-	-	696	0.062	0.058	505	-	-	-	-		
Refrigerator Removal	0	0	0	0	0	0	0.0	0.0	0	-	-	0	-	-	-	-	-	-	-		
Refrigerator Exchange	4	4	4	4	4	2,850	0.2	0.2	1,989	-	-	713	0.061	0.057	497	-	-	-	-		
Freezer Removal	0	0	0	0	0	0	0.0	0.0	0	-	-	0	-	-	-	-	-	-	-		
Freezer Exchange	1	1	1	1	1	630	0.1	0.1	534	-	-	630	0.066	0.061	534	-	-	-	-		
Total Non-Efficiency Measures	62					46,042							743								
Misc Ins,Attic Access/Vent	2					294							147								
Duct Sealing	0					0							0								
Duct Insulation	0					0							0								
Damming Material	0					0							0								
Htg. Sys. Tune & Clean	3					289							96								
Htg. Sys./WH Other	0					0							0								
Air Conditioning Work	0					0							0								
Water Heater Repair	0					0							0								
Refrigerator Coil Clean	0					0							0								
Waterbed Mattress Pad	0					0							0								
Programmable Tstat	0					0							0								
Unspecified Utility Meas.	0					0							0								
CO Detector	0					0							0								
Smoke Detector	0					0							0								
Fuses	0					0							0								
Htg Sys Safety Check	0					0							0								
Htg Sys Ventilation	9					1,737							193								
Water Heater Ventilation	0					0							0								
Bathroom Ventilation	0					0							0								
Dryer Ventilation	0					0							0								
Kitchen Ventilation	0					0							0								
Other Exhaust Ventilation	0					0							0								
Asbestos Removal (Minor)	0					0							0								
Health/Safety Repairs	42					54,918							1,308								
Health/Safety Other	0					0							0								
Consumables	0					0							0								
General Repairs	0					0							0								
Meter Refrig (no action)	1					0							0								
Meter Freezer (no action)	0					0							0								
Support	62					43,722							705								
Transportation Allowance	0					0							0								
Landlord Contr Misc	0					0							0								
Landlord Contr Furnace	0					0							0								
Landlord Contr DHW	0					0							0								
Client Contr (Any)	0					0							0								
Lead Safe Work	0					0							0								
Unspecified/Other	0					0							0								

Southern Iowa Economic Development Authority
Billing Adjusted Costs and Impacts for Utility-Funded Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$310,986

Utility Administration Expenditures: -

Total Labor and Material Expenditures: \$310,986

Measure	Number of Dwellings with Impacts			Number of Dwellings with Electricity Impacts		Spending on Materials & Labor (\$)	Billing Adjusted First-Year Savings					Average Billing Adjusted First Year Costs and Savings per Dwelling Receiving Measures							
	Total	Electric	Gas	Season Cooling	Heating		Summer kW	Electricity		Annual kWh	Gas		Spending on Materials & Labor (\$)	Summer kW	Electricity		Annual kWh	Gas	
								kWh	kWh		Pk-Day therms	Annual therms			kWh	kWh		Pk-Day therms	Annual therms
Total Efficiency Measures	67	66	50	65	66	245,106	15.2		13.9	50,313	129	11,673	3,658	0.233		0.211	762	2.58	233
Total Shell & Htg. Sys. Repl	67	65	50	61	64	209,248	13.6	16,406	11.4	16,806	33,212	125	11,031	3,123	0.223	269	0.178	263	511
Total Shell Measures	67	65	50	61	64	134,148	13.6	16,406	11.2	16,580	32,986	83	7,302	2,002	0.223	269	0.176	259	507
Wall Insul.	38	33	28	33	4	50,234	5.0	6,001	3.1	4,609	10,610	36	3,199	1,322	0.151	182	0.781	1,152	322
Open Blown Ceiling Insul.	55	50	42	50	5	46,437	5.6	6,792	3.0	4,355	11,147	24	2,080	844	0.113	136	0.591	871	223
Cavity Fill Insul.	7	7	6	6	1	4,415	0.6	764	1.2	1,707	2,471	4	392	631	0.106	127	1.158	1,707	353
Sloped Attic Insul.	14	13	9	13	2	4,580	0.7	894	0.6	880	1,775	6	551	327	0.057	69	0.298	440	137
Kneewall Insul.	12	11	7	11	1	2,181	0.4	470	0.3	443	913	2	183	182	0.035	43	0.300	443	83
Infil. Reduction	65	53	50	53	6	14,307	0.3	384	0.2	240	624	4	330	220	0.006	7	0.027	40	12
Found./Crawl. Insul.	30	15	26	14	2	6,720	0.9	1,100	0.3	486	1,586	3	293	224	0.065	79	0.165	243	106
Bandjoist Insul.	33	3	30	-	3	5,274	0.0	0	0.4	607	607	3	292	160	0.000	0	0.137	202	202
Furnace Blower Fan ¹	59	57	50	-	57	0	0.0	0	2.2	3,253	3,253	(0)	(18)	0	0.000	0	0.039	57	57
Exhaust Ventilatio ²	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-
Total Heating System Repl	27	2	25	-	2	75,100	0.0	0	0.2	226	226	42	3,729	2,781	0.000	0	0.077	113	113
Condensing Htg Sys Repl	25	0	25	-	-	70,700	0.0	0	0.0	0	0	42	3,729	2,828	-	-	-	-	1.69
Non-Cond Htg Sys Repl	0	0	0	-	-	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-
Electric Htg Sys Repl	2	2	0	-	2	4,400	0.0	0	0.2	226	226	0	0	2,200	0.000	0	0.077	113	113
Heat Pump Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-
Other Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-
	Total	Electric	Gas	Number of Measures by Fuel Type			Summer kW		Winter kW	Annual kWh	Pk-Day therms	Annual therms		Summer kW		Winter kW	Annual kWh	Pk-Day therms	Annual therms
Water Heating	59	33	26	97	55	43	29,357	0.0	0.0	2,730	3.6	642	498	0.000		0.001	83	0.137	25
Temp. Reduct.	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	0	-	-	-	-	-
WH Wrap	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	0	-	-	-	-	-
Pipe Insul.	56	32	24	56	32	24	337	0.0	0.0	1,353	0.3	101	6	0.000		0.000	42	0.01	4
LF Showerhead	3	2	1	3	2	1	26	0.0	0.0	350	0.0	7	9	0.000		0.004	175	0.02	7
Faucet Aerator	16	11	5	24	17	7	94	0.0	0.0	554	0.0	13	6	0.000		0.001	50	0.01	3
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	0	-	-	-	-	-
Hi-Eff or Electric Wtr Htr Repl.	21	4	17	14	4	11	28,900	0.0	0.0	473	3.2	521	1,376	0.000		0.003	118	0.19	31
Lighting	37	37		377	377		1,411	1.1	2.1	10,904	-	-	38	0.031		0.057	295	-	-
Refrigerator/Freezer ³	6	6		7	7		5,090	0.4	0.4	3,467	-	-	848	0.071		0.066	578	-	-
Refrigerator Removal	0	0		0	0		0	0.0	0.0	0	-	-	0	-		-	-	-	-
Refrigerator Exchange	5	5		5	5		4,092	0.3	0.3	2,399	-	-	818	0.059		0.055	480	-	-
Freezer Removal	0	0		0	0		0	0.0	0.0	0	-	-	0	-		-	-	-	-
Freezer Exchange	2	2		2	2		998	0.1	0.1	1,068	-	-	499	0.066		0.061	534	-	-
Total Non-Efficiency Measures	66					65,880							998						
Misc Ins,Attic Access/Vent	24						2,454												102
Duct Sealing	0						0												0
Duct Insulation	0						0												0
Damming Material	0						0												0
Htg. Sys. Tune & Clean	13						1,610												124
Htg. Sys./WH Other	0						0												0
Air Conditioning Work	0						0												0
Water Heater Repair	0						0												0
Refrigerator Coil Clean	0						0												0
Waterbed Mattress Pad	0						0												0
Programmable Tstat	0						0												0
Unspecified Utility Meas.	0						0												0
CO Detector	0						0												0
Smoke Detector	0						0												0
Fuses	0						0												0
Htg Sys Safety Check	0						0												0
Htg Sys Ventilation	17						3,700												218
Water Heater Ventilation	11						1,600												145
Bathroom Ventilation	0						0												0
Dryer Ventilation	0						0												0
Kitchen Ventilation	0						0												0
Other Exhaust Ventilation	0						0												0
Asbestos Removal (Minor)	0						0												0
Health/Safety Repairs	9						723												80
Health/Safety Other	0						0												0
Consumables	0						0												0
General Repairs	55						15,934												290
Meter Refrig (no action)	0						0												0
Meter Freezer (no action)	0						0												0
Support	65						39,859												613
Transportation Allowance	0						0												0
Landlord Contr Misc	0						0												0
Landlord Contr Furnace	0						0												0
Landlord Contr DHW	0						0												0
Client Contr (Any)	0						0												0
Lead Safe Work	0						0												0
Unspecified/Other	0						0												0

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Upper Des Moines Opportunity
Billing Adjusted Costs and Impacts for Utility-Funded Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$338,744

Utility Administration Expenditures: -

Total Labor and Material Expenditures: \$338,744

Measure	Number of Dwellings with Impacts			Number of Dwellings with Electricity Impacts		Spending on Materials & Labor (\$)	Billing Adjusted First-Year Savings						Average Billing Adjusted First Year Costs and Savings per Dwelling Receiving Measures								
	Total	Electric	Gas	Season Cooling	Heating		Summer kW	Electricity		Annual kWh	Pk-Day therms	Gas Annual therms	Spending on Materials & Labor (\$)	Summer kW	Electricity		Annual kWh	Pk-Day therms	Gas Annual therms		
								kWh	kWh						kWh	kWh					
Total Efficiency Measures	54	36	46	35	36	289,578	6.5		2.6	16,827	87	8,872	5,363	0.185		0.073	467	1.90	193		
Total Shell & Htg. Sys. Repl	54	35	46	30	35	232,932	5.9	7,118	1.9	3,059	10,177	82	8,030	4,314	0.197	237	0.054	87	291	1.79	175
Total Shell Measures	54	35	46	30	35	147,818	5.9	7,118	1.9	3,059	10,177	50	4,886	2,737	0.197	237	0.054	87	291	1.09	106
Wall Insul.	41	24	37	24	0	68,619	2.7	3,244	0.0	0	3,244	26	2,493	1,674	0.112	135	0.000	0	135	0.69	67
Open Blown Ceiling Insul.	41	25	35	25	0	19,092	1.6	1,940	0.0	0	1,940	6	542	466	0.064	78	0.000	0	78	0.16	15
Cavity Fill Insul.	20	11	17	11	0	11,578	0.6	766	0.0	0	766	6	587	579	0.058	70	0.000	0	70	0.35	35
Sloped Attic Insul.	18	10	16	10	0	6,294	0.5	546	0.0	0	546	6	540	350	0.045	55	0.000	0	55	0.35	34
Kneewall Insul.	7	4	5	4	0	1,617	0.1	114	0.0	0	114	1	73	231	0.024	29	0.000	0	29	0.15	15
Infil. Reduction	51	28	43	28	0	16,713	0.3	387	0.0	0	387	3	318	328	0.011	14	0.000	0	14	0.08	7
Found./Crawl. Insul.	21	2	19	2	0	16,755	0.1	120	0.0	0	120	3	263	798	0.050	60	0.000	0	60	0.14	14
Bandjoist Insul.	28	0	28	-	0	7,150	0.0	0	0.0	0	0	1	86	255	-	-	-	-	-	0.03	3
Furnace Blower Fan ¹	54	35	46	-	35	0	0.0	0	1.9	3,059	3,059	(0)	(16)	0	0.000	0	0.054	87	87	(0.00)	(0)
Exhaust Ventilator ²	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Total Heating System Repl	34	0	34	-	0	85,114	0.0	0	0.0	0	0	32	3,144	2,503	-	-	-	-	-	0.95	92
Condensing Htg Sys Repl	34	0	34	-	-	85,114	0.0	0	0.0	0	0	32	3,144	2,503	-	-	-	-	-	0.95	92
Non-Cond Htg Sys Repl	0	0	0	-	-	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Electric Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Heat Pump Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Other Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
	Total	Electric	Gas	Number of Measures by Fuel Type			Summer kW		Winter kW		Annual kWh	Pk-Day therms	Annual therms		Summer kW		Winter kW		Annual kWh	Pk-Day therms	Annual therms
Water Heating	48	14	34	85	22	63	49,310	0.0	0.0		1,595	4.9	842	1,027	0.000		0.002		114	0.144	25
Temp. Reduct.	0	0	0	0	0	0	0	0.0	0.0	0	0	0.0	0	0	-	-	-	-	-	-	-
WH Wrap	0	0	0	0	0	0	0	0.0	0.0	0	0	0.0	0	0	-	-	-	-	-	-	-
Pipe Insul.	48	14	34	48	14	34	960	0.0	0.0	0	588	0.2	83	20	0.000	0.000		42	0.01	2	
LF Showerhead	0	0	0	0	0	0	0	0.0	0.0	0	0	0.0	0	0	-	-	-	-	-	-	-
Faucet Aerator	0	0	0	0	0	0	0	0.0	0.0	0	0	0.0	0	0	-	-	-	-	-	-	-
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0.0	0.0	0	0	0.0	0	0	-	-	-	-	-	-	-
Hi-Eff or Electric Wtr Htr Repl.	39	8	31	37	8	29	48,350	0.0	0.0	0	1,007	4.7	760	1,240	0.000	0.003		126	0.15	25	
Lighting	32	32		234	234		1,638	0.2	0.4		1,926	-	-	51	0.006		0.012		60	-	-
Refrigerator/Freezer ³	7	7		6	6		5,698	0.4	0.4		3,130	-	-	814	0.055		0.051		447	-	-
Refrigerator Removal	0	0		0	0		0	0.0	0.0	0	0	-	-	0	-	-	-	-	-	-	-
Refrigerator Exchange	7	7		5	5		5,075	0.3	0.3		2,596	-	-	725	0.046	0.043		371	-	-	-
Freezer Removal	0	0		0	0		0	0.0	0.0	0	0	-	-	0	-	-	-	-	-	-	-
Freezer Exchange	1	1		1	1		623	0.1	0.1		534	-	-	623	0.066	0.061		534	-	-	-
Total Non-Efficiency Measures	54					49,167								910							
Misc Ins,Attic Access/Vent	29						3,014													104	
Duct Sealing	0					0														0	
Duct Insulation	3					1,220														407	
Damming Material	0					0														0	
Htg. Sys. Tune & Clean	11					1,300														118	
Htg. Sys./WH Other	0					0														0	
Air Conditioning Work	0					0														0	
Water Heater Repair	0					0														0	
Refrigerator Coil Clean	0					0														0	
Waterbed Mattress Pad	0					0														0	
Programmable Tstat	0					0														0	
Unspecified Utility Meas.	0					0														0	
CO Detector	0					0														0	
Smoke Detector	0					0														0	
Fuses	0					0														0	
Htg Sys Safety Check	0					0														0	
Htg Sys Ventilation	17					3,098														182	
Water Heater Ventilation	17					1,891														111	
Bathroom Ventilation	0					0														0	
Dryer Ventilation	0					0														0	
Kitchen Ventilation	0					0														0	
Other Exhaust Ventilation	0					0														0	
Asbestos Removal (Minor)	0					0														0	
Health/Safety Repairs	15					780														52	
Health/Safety Other	0					0														0	
Consumables	0					0														0	
General Repairs	23					4,316														188	
Meter Refrig (no action)	0					0														0	
Meter Freezer (no action)	0					0														0	
Support	54					33,548														621	
Transportation Allowance	0					0														0	
Landlord Contr Misc	0					0														0	
Landlord Contr Furnace	0					0														0	
Landlord Contr DHW	0					0														0	
Client Contr (Any)	0					0														0	
Lead Safe Work	0					0														0	
Unspecified/Other	0					0														0	

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

West Central Development Corporation
Billing Adjusted Costs and Impacts for Utility-Funded Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$310,246

Utility Administration Expenditures: -

Total Labor and Material Expenditures: \$310,246

Measure	Number of Dwellings with Impacts			Number of Dwellings with Electricity Impacts		Spending on Materials & Labor (\$)	Billing Adjusted First-Year Savings						Average Billing Adjusted First Year Costs and Savings per Dwelling Receiving Measures								
	Total	Electric	Gas	Season Cooling	Heating		Summer kW	Electricity			Gas		Spending on Materials & Labor (\$)	Summer kW	Electricity		Gas				
								kWh	kW	Winter kWh	Annual kWh	Pk-Day therms			Annual therms	kWh	kW	Winter kWh	Annual kWh	Pk-Day therms	Annual therms
Total Efficiency Measures	53	48	41	47	48	243,084	13.3		7.5		36,322	85	7,785	4,586	0.282		0.157		757	2.08	190
Total Shell & Htg. Sys. Repl	52	47	41	42	47	189,106	11.9	14,326	5.5	7,934	22,259	81	6,944	3,637	0.283	341	0.117	169	474	1.97	169
Total Shell Measures	52	47	41	42	47	96,627	11.9	14,326	5.5	7,934	22,259	36	3,063	1,858	0.283	341	0.117	169	474	0.87	75
Wall Insul.	34	28	29	28	2	36,911	4.9	5,850	1.1	1,641	7,491	16	1,375	1,086	0.173	209	0.568	821	268	0.55	47
Open Blown Ceiling Insul.	47	38	38	38	3	27,821	4.9	5,940	2.4	3,475	9,416	9	765	592	0.130	156	0.802	1,158	248	0.23	20
Cavity Fill Insul.	6	6	4	6	1	2,723	0.5	565	0.1	136	700	1	88	454	0.078	94	0.094	136	117	0.25	22
Sloped Attic Insul.	18	14	14	14	1	6,466	1.1	1,325	0.6	908	2,233	5	395	359	0.078	95	0.629	908	160	0.33	28
Kneewall Insul.	12	7	8	7	1	1,889	0.1	141	0.1	184	325	0	35	157	0.017	20	0.128	184	46	0.05	4
Infil. Reduction	51	19	41	19	3	16,002	0.3	411	0.2	310	721	4	309	314	0.018	22	0.072	103	38	0.09	8
Found./Crawl. Insul.	13	2	12	1	1	3,392	0.1	93	0.1	85	179	1	57	261	0.077	93	0.059	85	89	0.06	5
Bandjoist Insul.	18	1	17	-	1	1,423	0.0	0	0.0	26	26	1	46	79	0.000	0	0.018	26	26	0.03	3
Furnace Blower Fan ¹	49	44	41	-	44	0	0.0	0	0.8	1,169	1,169	(0)	(7)	0	0.000	0	0.018	27	27	(0.00)	(0)
Exhaust Ventilator ²	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Total Heating System Repl	32	0	32	-	0	92,479	0.0	0	0.0	0	0	45	3,881	2,890	-	-	-	-	-	1.41	121
Condensing Htg Sys Repl	32	0	32	-	-	92,479	0.0	0	0.0	0	0	45	3,881	2,890	-	-	-	-	-	1.41	121
Non-Cond Htg Sys Repl	0	0	0	-	-	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Electric Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Heat Pump Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Other Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
	Total	Electric	Gas	Number of Measures by Fuel Type			Summer kW	Winter kW			Annual kWh	Pk-Day therms	Annual therms		Summer kW	Winter kW			Annual kWh	Pk-Day therms	Annual therms
Water Heating	44	13	31	123	31	92	44,278	0.0	0.0		1,710	4.6	841	1,006	0.000	0.002		132	0.150	27	
Temp. Reduct.	0	0	0	0	0	0	0	0.0	0.0	0	0	0.0	0	0	-	-	-	-	-	-	-
WH Wrap	0	0	0	0	0	0	0	0.0	0.0	0	0	0.0	0	0	-	-	-	-	-	-	-
Pipe Insul.	37	11	26	37	11	26	720	0.0	0.0	0	465	0.2	68	19	0.000	0.000		42	0.01	3	
LF Showerhead	11	2	9	11	2	9	110	0.0	0.0	0	350	0.2	57	10	0.000	0.004		175	0.02	6	
Faucet Aerator	34	11	23	51	15	36	255	0.0	0.0	0	488	0.1	45	8	0.000	0.001		44	0.01	2	
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0.0	0.0	0	0	0.0	0	0	-	-	-	-	-	-	-
Hi-Eff or Electric Wtr Htr Repl.	30	4	26	24	3	21	43,193	0.0	0.0	0	407	4.1	671	1,440	0.000	0.003		102	0.16	26	
Lighting	36	36		371	371		2,748	0.8	1.5		7,563	-	-	76	0.022	0.041		210	-	-	
Refrigerator/Freezer ³	9	9		9	9		6,952	0.6	0.6		4,790	-	-	772	0.065	0.061		532	-	-	
Refrigerator Removal	0	0		0	0		0	0.0	0.0	0	0	-	-	0	-	-	-	-	-	-	-
Refrigerator Exchange	7	7		7	7		5,652	0.4	0.4	0	3,304	-	-	807	0.058	0.054		472	-	-	
Freezer Removal	0	0		0	0		0	0.0	0.0	0	0	-	-	0	-	-	-	-	-	-	-
Freezer Exchange	2	2		3	3		1,300	0.2	0.2	0	1,485	-	-	650	0.091	0.085		743	-	-	
Total Non-Efficiency Measures	53						67,161							1,267							
Misc Ins,Attic Access/Vent	41						4,598														
Duct Sealing	0						0														
Duct Insulation	39						2,148														
Damming Material	0						0														
Htg. Sys. Tune & Clean	11						1,600														
Htg. Sys./WH Other	0						0														
Air Conditioning Work	0						0														
Water Heater Repair	0						0														
Refrigerator Coil Clean	0						0														
Waterbed Mattress Pad	0						0														
Programmable Tstat	0						0														
Unspecified Utility Meas.	0						0														
CO Detector	0						0														
Smoke Detector	0						0														
Fuses	0						0														
Htg Sys Safety Check	0						0														
Htg Sys Ventilation	33						7,175														
Water Heater Ventilation	24						5,150														
Bathroom Ventilation	0						0														
Dryer Ventilation	0						0														
Kitchen Ventilation	0						0														
Other Exhaust Ventilation	0						0														
Asbestos Removal (Minor)	0						0														
Health/Safety Repairs	23						1,406														
Health/Safety Other	0						0														
Consumables	0						0														
General Repairs	51						12,727														
Meter Refrig (no action)	0						0														
Meter Freezer (no action)	0						0														
Support	52						32,357														
Transportation Allowance	0						0														
Landlord Contr Misc	0						0														
Landlord Contr Furnace	0						0														
Landlord Contr DHW	0						0														
Client Contr (Any)	0						0														
Lead Safe Work	0						0														
Unspecified/Other	0						0														

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Community Action Agency of Siouxland
Billing Adjusted Costs and Impacts for Utility-Funded Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$186,095

Utility Administration Expenditures: -

Total Labor and Material Expenditures: \$186,095

Measure	Number of Dwellings with Impacts			Number of Dwellings with Electricity Impacts		Spending on Materials & Labor (\$)	Billing Adjusted First-Year Savings						Average Billing Adjusted First Year Costs and Savings per Dwelling Receiving Measures								
	Total	Electric	Gas	Season Cooling	Heating		Summer kW	Electricity			Gas		Spending on Materials & Labor (\$)	Summer kW	Electricity			Gas			
								kWh	kW	Winter kWh	Annual kWh	Pk-Day therms			Annual therms	kWh	kW	Winter kWh	Annual kWh	Pk-Day therms	Annual therms
Total Efficiency Measures	39	35	32	35	35	166,714	7.7		10.0	36,358	70	6,783	4,275	0.221		0.285	1,039	2.20	212		
Total Shell & Htg. Sys. Repl	37	33	30	31	33	129,783	5.9	7,134	7.6	11,656	18,790	67	6,125	3,508	0.191	230	0.231	353	569	2.24	204
Total Shell Measures	37	33	30	31	33	69,883	5.9	7,134	7.6	11,656	18,790	37	3,334	1,889	0.191	230	0.231	353	569	1.22	111
Wall Insul.	14	12	12	12	1	17,621	1.7	2,008	0.4	640	2,648	9	863	1,259	0.139	167	0.419	640	221	0.79	72
Open Blown Ceiling Insul.	35	30	28	30	4	37,412	3.3	4,033	4.1	6,267	10,301	21	1,921	1,069	0.111	134	1.025	1,567	343	0.75	69
Cavity Fill Insul.	6	5	3	5	2	2,724	0.5	580	1.4	2,073	2,654	2	215	454	0.096	116	0.678	1,037	531	0.78	72
Sloped Attic Insul.	4	3	4	3	0	1,072	0.2	238	0.0	0	238	2	163	268	0.066	79	0.000	0	79	0.45	41
Kneewall Insul.	1	1	1	1	0	404	0.0	50	0.0	0	50	0	29	404	0.042	50	0.000	0	50	0.32	29
Infil. Reduction	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Found./Crawl. Insul.	9	3	7	3	0	8,346	0.2	224	0.0	0	224	1	112	927	0.062	75	0.000	0	75	0.18	16
Bandjoist Insul.	7	0	7	-	0	2,304	0.0	0	0.0	0	0	0	43	329	-	-	-	-	-	0.07	6
Furnace Blower Fan ¹	33	29	30	-	29	0	0.0	0	1.7	2,675	2,675	(0)	(11)	0	0.000	0	0.060	92	92	(0.00)	(0)
Exhaust Ventilatio ²	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Total Heating System Repl	20	0	20	-	0	59,900	0.0	0	0.0	0	0	31	2,792	2,995	-	-	-	-	-	1.53	140
Condensing Htg Sys Repl	20	0	20	-	-	59,900	0.0	0	0.0	0	0	31	2,792	2,995	-	-	-	-	-	1.53	140
Non-Cond Htg Sys Repl	0	0	0	-	-	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Electric Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Heat Pump Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Other Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
	Total	Electric	Gas	Total	Electric	Gas		Summer kW	Winter kW	Annual kWh	Pk-Day therms	Annual therms		Summer kW	Winter kW	Annual kWh	Pk-Day therms	Annual therms			
Water Heating	34	10	24	78	19	59	22,505	0.0	0.0	1,777	3.2	657	662	0.000	0.003	178	0.135	27			
Temp. Reduct.	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-			
WH Wrap	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-			
Pipe Insul.	32	8	24	32	8	24	600	0.0	0.0	342	0.3	89	19	0.000	0.000	43	0.01	4			
LF Showerhead	24	5	19	29	6	23	290	0.0	0.0	878	0.5	167	12	0.000	0.004	176	0.03	9			
Faucet Aerator	4	1	3	4	1	3	20	0.0	0.0	32	0.0	5	5	0.000	0.001	32	0.01	2			
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-			
Hi-Eff or Electric Wtr Htr Repl.	16	5	11	13	4	9	21,595	0.0	0.0	524	2.4	396	1,350	0.000	0.003	105	0.22	36			
Lighting	34	34		342	342		2,458	0.7	1.2	6,275	-	-	72	0.019	0.036	185	-	-			
Refrigerator/Freezer ³	19	19		19	19		11,968	1.2	1.1	9,516	-	-	630	0.062	0.058	501	-	-			
Refrigerator Removal	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-			
Refrigerator Exchange	18	18		18	18		11,385	1.1	1.0	8,982	-	-	633	0.061	0.057	499	-	-			
Freezer Removal	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-			
Freezer Exchange	1	1		1	1		583	0.1	0.1	534	-	-	583	0.066	0.061	534	-	-			
Total Non-Efficiency Measures	30						19,381						646								
Misc Ins,Attic Access/Vent	1						85														
Duct Sealing	0						0														
Duct Insulation	0						0														
Damming Material	0						0														
Htg. Sys. Tune & Clean	0						0														
Htg. Sys./WH Other	0						0														
Air Conditioning Work	0						0														
Water Heater Repair	0						0														
Refrigerator Coil Clean	0						0														
Waterbed Mattress Pad	0						0														
Programmable Tstat	0						0														
Unspecified Utility Meas.	0						0														
CO Detector	0						0														
Smoke Detector	0						0														
Fuses	0						0														
Htg Sys Safety Check	0						0														
Htg Sys Ventilation	1						105														
Water Heater Ventilation	1						160														
Bathroom Ventilation	0						0														
Dryer Ventilation	0						0														
Kitchen Ventilation	0						0														
Other Exhaust Ventilation	0						0														
Asbestos Removal (Minor)	0						0														
Health/Safety Repairs	16						21,595						1,350								
Health/Safety Other	0						0						0								
Consumables	0						0						0								
General Repairs	0						0						0								
Meter Refrig (no action)	14						0						0								
Meter Freezer (no action)	9						0						0								
Support	25						19,031						761								
Transportation Allowance	0						0						0								
Landlord Contr Misc	0						0						0								
Landlord Contr Furnace	0						0						0								
Landlord Contr DHW	0						0						0								
Client Contr (Any)	0						0						0								
Lead Safe Work	0						0						0								
Unspecified/Other	0						0						0								

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Polk County Development Services
Billing Adjusted Costs and Impacts for Utility-Funded Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$624,551

Utility Administration Expenditures: -

Total Labor and Material Expenditures: \$624,551

Measure	Number of Dwellings with Impacts			Number of Dwellings with Electricity Impacts		Spending on Materials & Labor (\$)	Billing Adjusted First-Year Savings						Average Billing Adjusted First Year Costs and Savings per Dwelling Receiving Measures								
	Total	Electric	Gas	Season Cooling	Heating		Summer kW	Electricity		Annual kWh	Gas		Spending on Materials & Labor (\$)	Summer kW	Electricity		Annual kWh	Gas			
								kWh	kWh		Pk-Day therms	Annual therms			kWh	kWh		Pk-Day therms	Annual therms		
Total Efficiency Measures	110	110	99	107	110	559,652	23.6		20.4	76,469	263	24,853	5,088	0.221		0.185	695	2.66	251		
Total Shell & Htg. Sys. Repl	102	102	98	82	102	442,206	20.8	25,040	16.4	24,400	49,440	248	22,123	4,335	0.253	305	0.160	239	485	2.53	226
Total Shell Measures	102	102	98	82	102	314,856	20.8	25,040	16.4	24,400	49,440	172	15,321	3,087	0.253	305	0.160	239	485	1.75	156
Wall Insul.	68	58	67	58	1	143,637	8.8	10,626	1.9	2,776	13,402	58	5,188	2,112	0.152	183	1.892	2,776	231	0.87	77
Open Blown Ceiling Insul.	88	77	84	76	4	84,652	7.8	9,360	3.7	5,590	14,951	72	6,454	962	0.102	123	0.926	1,398	194	0.86	77
Cavity Fill Insul.	58	49	55	48	3	26,275	1.5	1,808	0.7	976	2,785	15	1,380	453	0.031	38	0.217	325	57	0.28	25
Sloped Attic Insul.	31	29	30	29	1	14,814	1.2	1,391	0.4	654	2,045	11	975	478	0.040	48	0.445	654	71	0.36	33
Kneewall Insul.	35	33	34	33	1	13,360	0.7	846	0.6	815	1,661	7	639	382	0.021	26	0.555	815	50	0.21	19
Infil. Reduction	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Found./Crawl. Insul.	44	14	43	13	1	32,120	0.8	1,009	0.1	88	1,097	8	733	730	0.064	78	0.060	88	78	0.19	17
Bandjoist Insul.	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Furnace Blower Fan ¹	98	98	98	-	98	0	0.0	0	9.1	13,501	13,501	(1)	(49)	0	0.000	0	0.092	138	138	(0.01)	(1)
Exhaust Ventilatio ²	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Total Heating System Repl	60	0	60	-	0	127,350	0.0	0	0.0	0	0	76	6,802	2,122	-	-	-	-	-	1.27	113
Condensing Htg Sys Repl	60	0	60	-	-	127,350	0.0	0	0.0	0	0	76	6,802	2,122	-	-	-	-	-	1.27	113
Non-Cond Htg Sys Repl	0	0	0	-	-	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Electric Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Heat Pump Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Other Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
	Total	Electric	Gas	Number of Measures by Fuel Type			Summer kW		Winter kW	Annual kWh	Pk-Day therms	Annual therms		Summer kW		Winter kW	Annual kWh	Pk-Day therms	Annual therms		
Water Heating	99	13	86	326	38	288	97,570	0.0	0.0	1,732	15.0	2,730	986	0.000		0.002	133	0.174	32		
Temp. Reduct.	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-	-	
WH Wrap	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-	-	
Pipe Insul.	93	13	80	93	13	80	1,557	0.0	0.0	554	0.7	235	17	0.000	0.000	0.000	43	0.01	3		
LF Showerhead	25	2	23	26	2	24	255	0.0	0.0	343	0.5	164	10	0.000	0.004	0.004	171	0.02	7		
Faucet Aerator	78	11	67	147	22	125	693	0.0	0.0	719	0.6	175	9	0.000	0.001	0.001	65	0.01	3		
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0	0	-	-	-	-	-	-	-	
Hi-Eff or Electric Wtr Htr Repl.	66	1	65	60	1	59	95,065	0.0	0.0	116	13.2	2,156	1,440	0.000	0.003	0.003	116	0.20	33		
Lighting	90	90		905	905		6,412	1.5	2.7	13,817	-	-	71	0.016		0.030	154	-	-		
Refrigerator/Freezer ³	23	23		23	23		13,464	1.4	1.3	11,480	-	-	585	0.061		0.057	499	-	-		
Refrigerator Removal	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-	-	-	
Refrigerator Exchange	23	23		23	23		13,464	1.4	1.3	11,480	-	-	585	0.061	0.057	0.057	499	-	-		
Freezer Removal	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-	-	-	
Freezer Exchange	0	0		0	0		0	0.0	0.0	0	-	-	0	-	-	-	-	-	-	-	
Total Non-Efficiency Measures	106					64,899							612								
Misc Ins,Attic Access/Vent	1					1,062							1,062								
Duct Sealing	0					0							0								
Duct Insulation	0					0							0								
Damming Material	0					0							0								
Htg. Sys. Tune & Clean	22					2,750							125								
Htg. Sys./WH Other	0					0							0								
Air Conditioning Work	0					0							0								
Water Heater Repair	0					0							0								
Refrigerator Coil Clean	0					0							0								
Waterbed Mattress Pad	0					0							0								
Programmable Tstat	0					0							0								
Unspecified Utility Meas.	0					0							0								
CO Detector	0					0							0								
Smoke Detector	0					0							0								
Fuses	0					0							0								
Htg Sys Safety Check	0					0							0								
Htg Sys Ventilation	48					7,472							156								
Water Heater Ventilation	45					6,644							148								
Bathroom Ventilation	0					0							0								
Dryer Ventilation	0					0							0								
Kitchen Ventilation	0					0							0								
Other Exhaust Ventilation	0					0							0								
Asbestos Removal (Minor)	0					0							0								
Health/Safety Repairs	66					95,065							1,440								
Health/Safety Other	0					0							0								
Consumables	0					0							0								
General Repairs	0					0							0								
Meter Refrig (no action)	0					0							0								
Meter Freezer (no action)	0					0							0								
Support	67					46,970							701								
Transportation Allowance	0					0							0								
Landlord Contr Misc	0					0							0								
Landlord Contr Furnace	0					0							0								
Landlord Contr DHW	0					0							0								
Client Contr (Any)	0					0							0								
Lead Safe Work	0					0							0								
Unspecified/Other	0					0							0								

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

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APPENDIX A -- CLIENT CHARACTERISTICS

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Household characteristics										
Quarterly gross income	\$3,911	\$4,002	\$4,190	\$4,130	\$4,344	\$4,355	\$4,286	\$4,406	\$4,600	\$6,691
Average members	2.9	2.8	2.8	2.9	2.9	2.8	2.7	2.7	2.7	2.7
Percentage of households with:										
Elderly	32.6	31.5	34.2	24.0	29.1	29.4	30.8	28.9	31.3	34.4
Handicapped	43.1	42.7	35.7	25.4	32.9	30.1	32.6	31.3	30.6	34.1
Young children	18.7	21.5	21.5	18.6	25.2	21.9	20.1	22.4	19.4	17.4
Housing type (%)										
Single family home	90.7	87.7	87.9	82.6	89.6	87.3	84.8	87.4	88.4	88.1
Mobile home	7.8	7.5	9.9	7.6	10.0	10.2	11.9	10.6	8.6	7.9
Duplex	0.6	0.1	0.3	0.3	0.1	0.7	3.2	1.9	2.8	3.9
Three+ unit apartment	0.4	1.3	1.0	6.8	0.3	1.8	0.1	0.1	0.2	0.1
Rent a room	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown/other	0.6	3.5	1.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0
Heating system type (%)										
Natural gas	84.3	85.8	85.6	82.7	81.0	80.8	80.3	84.2	86.7	85.4
Propane	11.4	10.1	9.3	11.9	12.9	13.3	12.3	9.2	8.1	8.6
Fuel oil	0.6	0.7	0.3	0.8	0.8	0.8	0.9	0.2	0.1	0.5
Electricity	3.5	3.3	4.7	4.5	5.4	5.1	6.4	6.4	5.2	5.5
Other	0.2	0.1	0.1	0.0	0.0	0.0	0.2	0.0	0.0	0.0
Air conditioning type (%)										
Central	56.3	52.5	55.3	54.1	58.7	57.3	60.2	63.6	62.0	62.6
Room	8.7	34.6	32.5	31.4	27.8	30.4	29.4	26.3	29.5	28.0
None or Missing Data	35.0	12.8	12.2	14.5	13.6	12.3	10.4	10.1	8.5	9.4
Blower door readings (average cfm50)										
Pre	3,639	3,608	3,374	3,281	3,294	3,454	3,281	3,437	3,429	3,420
Post	2,216	2,215	2,120	2,040	2,054	2,139	2,053	2,100	2,148	2,565

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APPENDIX B –FIGURE DATA

Figure 1.1 First Year Energy Savings (therms) – Program

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Heating System Work	110744	114444	173277	286866	286414	192441	102711	116295	113515	107412
Infiltration Reduction	28699	26915	37383	54194	59030	35991	24403	24864	22482	20948
Insulation	236878	225799	307272	480401	494564	333793	197200	197846	184203	148756
Light/Water Heat/Other Utilit	12845	7229	11235	17070	16057	9698	7726	6002	6062	4403
Water Heater Replacement	19267	17880	22830	44509	54904	32819	25296	28290	33942	29679
Whole House Ventilation									-2392	-4936

Figure 1.2 First Year Energy Savings (kWh) – Program

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Heating System Work	2556	2159	3693	6770	8324	4975	3937	186516	201190	185546
Infiltration Reduction	61080	53435	81711	146544	150295	59937	39935	46035	32037	41401
Insulation	764432	690330	1101156	1779971	1811722	759702	466832	466307	358537	446239
Light/Water Heat/Other Utilit	1527057	1195736	1799651	2589000	2734566	947748	596538	567195	572018	371009
Water Heater Replacement	34466	9621	9359	15535	19171	7824	12343	14023	15089	17269
Whole House Ventilation									-24538	-59517

Figure 1.3 Overall Program Expenditures

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Heating System Work	2743404	2575473	3699209	6943168	8182168	5189193	3123974	3465461	3376066	3390913
Infiltration Reduction	774027	725427	1139440	2142574	2357653	1476133	1002359	1041087	1005719	1182412
Insulation	3709790	3848467	6258426	10920427	12616772	7584763	4317731	4509492	4279518	4188388
Light/Water Heat/Other Utilit	782202	611081	838645	1198884	1233806	720138	424488	356538	327532	328738
Other	812863	771670	1416454	3151309	2584355	1988982	1752150	1700878	2151835	1982511
Repair	919454	930825	1476901	2348113	2405336	1491583	1039839	971976	785187	930041
Support	3501826	3550464	5626121	9459046	8932316	5818840	4656124	4864035	4756716	5302237
Water Heater Replacement	570378	521733	777795	1673951	2426666	1527656	1034375	1316775	1562901	1579574
Whole House Ventilation					687151	648556	367224	488871	368924	1018951

Figure 1.4 Average Program Expenditures per Housing Unit

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Heating System Work	1400	1400	1370	1640	1800	1750	1690	2080	2230	2302
Infiltration Reduction	400	390	420	480	520	500	540	620	660	803
Insulation	1890	2090	2320	2420	2780	2550	2330	2710	2830	2843
Light/Water Heat/Other Ut	400	400	310	270	270	240	230	210	220	223
Other	410	350	520	600	690	670	950	1020	1420	1346
Repair	470	500	550	520	530	500	560	580	520	631
Support	1790	1920	2080	2100	1970	1960	2520	2920	3140	3600
Water Heater Repl	290	280	290	370	540	510	560	790	1030	1072
Whole House Ventilation					150	220	200	290	240	692
	7048	7336	7864	8392	9258	8901	9577	11227	12295	13512

Figure 1.6 First Year Client Fuel Cost Savings (Nominal Dollars)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Whole House Ventilation									-5593	-12094
Heating System Work	163289	162531	194435	347960	371197	227712	121871	129924	123290	114855
Infiltration Reduction	47058	42514	50567	79880	84236	43906	29920	28584	23482	23425
Insulation	388576	372028	438803	731293	759964	424194	256624	234798	199673	183128
Light/Water Heat/Other Ut	142502	110391	164826	264515	280880	103539	66702	63990	67400	45384
Water Heater Replacement	31336	28086	26646	49095	63944	37826	29556	31404	35593	31142

Figure 1.8 First Year Energy Savings (therms) – Utility only

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Heating System Work	64915	68807	67873	77401	111218	67910	60813	70795	67323	69667
Infiltration Reduction			3350	4425	10340	5358	5129	5467	4923	4784
Insulation	172022	161451	147574	123140	207156	131917	131486	132525	119370	102315
Light/Water Heat/Other Utilit	8551	4680	5107	4134	6809	4029	4604	3911	3852	2809
Water Heater Replacement	6664	7333	7808	10499	25346	13943	15335	15826	18230	17885

Figure 1.9 First Year Energy Savings (kWh) – Utility only

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Heating System Work	146		832	536	3286	417	224	64339	66083	71506
Infiltration Reduction	26	13	7456	11035	18659	7535	6267	9268	8069	8430
Insulation	501977	465814	491564	497304	613470	264752	237590	282915	212946	283722
Light/Water Heat/Other Utilit	867050	720681	705236	704991	922461	347294	336976	344858	350640	218339
Water Heater Replacement	16686	3727	5779	8485	11516	4774	3587	5753	6780	9119

Figure 1.10 Utility Expenditures

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Heating System Work	1126270	1099188	1052918	1207970	2082247	1176515	1200207	1557590	1520693	1594196
Infiltration Reduction	29	29	72138	142164	288225	173869	172746	198737	204838	212265
Insulation	2151627	2238735	2417435	2285914	3753358	2295748	2306634	2528094	2353124	2422997
Light/Water Heat/Other Utilit	407230	327658	291378	296528	375480	249184	227782	200560	188571	180770
Other	71349	63409	51664	60862	128109	72842	62892	107646	124082	147766
Repair	181204	170974	163350	104189	157260	96832	104157	129832	121538	123880
Support	447880	463990	495431	458520	706131	420502	466296	564572	523448	602760
Water Heater Replacement	156738	161764	193094	272140	702797	414525	481837	597828	762163	849809